



HWA GEOSCIENCES INC.

Geotechnical Engineering • Hydrogeology • Geoenvironmental Services • Inspection & Testing

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
DUWAMISH SUBSTATION
Tax Parcel #5624200950
10000 West Marginal Way South
HWA Project No. 2006-034-22**

**Prepared for
Seattle Fleets & Facilities**

May 12, 2006



HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
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HWA GEOSCIENCES INC.

Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Inspection & Testing

May 12, 2006

HWA Project No. 2006-034

Seattle Fleets & Facilities

700 Fifth Avenue

Suite 5200

Seattle, Washington 98104-5031

Attention: Ms. Joan Rosenstock

Subject: **PHASE II ENVIRONMENTAL SITE ASSESSMENT**
Duwamish Substation
Tax Parcel #5624200950
10000 West Marginal Place South
Seattle, Washington

Dear Ms. Rosenstock,

Enclosed is a copy of the Phase II Environmental Site Assessment report for the Duwamish Substation site in Seattle, Washington.

We appreciate the opportunity to provide professional services on this project. Please call if you have any questions.

Sincerely,

HWA GEOSCIENCES INC.

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Senior Hydrogeologist

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**PHASE II ENVIRONMENTAL SITE ASSESSMENT
DUWAMISH SUBSTATION
10000 WEST MARGINAL PLACE SOUTH
TAX PARCEL #5624200950
SEATTLE, WASHINGTON**

1.0 INTRODUCTION

This report presents the results of the HWA GeoSciences Inc. (HWA) Phase II Environmental Site Assessment (ESA) conducted for a property located at 10000 West Marginal Place South and adjacent to the Duwamish Waterway, in the Beverly Park neighborhood of Seattle, Washington (subject property). This work was conducted for Seattle Fleets and Facilities, which is evaluating the subject property for potential wetlands mitigation. The subject property is located on West Marginal Place South and is adjacent to Turning Basin 3 on the Duwamish Waterway. Figure 1 shows the site vicinity.

1.1 SITE LOCATION AND DESCRIPTION

The subject property is located at 10000 West Marginal Place South, Seattle, Washington. Current land use is as a portion of a right-of-way for power transmission line towers and buffer area for the adjacent Seattle City Light (SCL) substation. The subject property and adjacent shoreline areas are under consideration as potential wetlands mitigation sites. Mitigation activities may include removal of shoreline riprap, restoring the shoreline to a more natural slope and vegetated condition, and creation of cove areas by excavation of selected nearshore upland areas. Figures 1 and 2 show the subject property location and site plan.

The subject property is approximately 2.7 acres in area. The subject property is generally flat, with a steep slope to the waterway to the east-southeast, with an elevation of approximately 10 feet above mean sea level (USGS, 1983). The surrounding land is generally flat. The subject property, with the exception of the transmission line towers, is undeveloped and vegetated.

1.2 SCOPE OF WORK

HWA's scope of work for this project was designed to investigate the potential presence of surficial soil sediment, and ground water contamination that may impact the site's suitability for wetland mitigation and shoreline restoration, as well as present liability

issues, health and safety concerns, disposal or remediation costs. The scope of work is summarized below:

- 1) Review available data, including historical site plans
- 2) Collect two sediment samples in selected areas where excavations for shoreline improvements have been proposed.
- 3) Complete three soil borings and three monitoring wells in selected areas where soil excavation has been proposed.
- 4) Submit sediment, soil and ground water samples for laboratory analysis
- 5) Prepare report

2.0 SAMPLE LOCATIONS AND METHODS

HWA conducted the exploration program on April 11 and 18, 2006. The program consisted of drilling six borings (three ground water monitoring wells, two drilled soil borings, and one hand auger boring) to depths of 6.5 to 25 feet below ground surface and collecting two surficial sediment samples from shoreline areas. Figure 2 shows the boring and sediment sample locations. Appendix A contains the Sampling and Analysis Plan which describes the site investigation methodologies. Appendix B contains the boring logs.

Boring locations were selected at or near areas where shallow soils may be excavated or disturbed as part of proposed wetland mitigation activities, subject to access limitations, overhead and underground utilities. Sediment sample locations were selected based on the presence of sediment along the largely riprap-armored waterway bank, in areas at or near proposed cove excavations.

2.1 SEDIMENT SAMPLING

On April 11, 2006, HWA collected sediment samples at selected locations using pre-cleaned stainless steel scoops. Sampling was conducted at low tide to access sediments below rip-rap and shoreline armoring.

All sediment samples were transferred from the sampling device to laboratory-provided glassware, placed in a cooler with "blue ice" and transferred under chain-of-custody protocol to the analytical laboratory.

HWA collected one sediment sample from each sampling location at a depth of approximately 6 to 12 inches below ground surface (bgs). Figure 2 shows the sampling locations. All sampling locations were field screened using a photo ionization detector (PID). No elevated PID readings were detected.

Sediment sample descriptions are summarized in Table 1, below. Appendix A contains the laboratory analytical reports.

2.2 SOIL BORING AND SAMPLING

Under subcontract to HWA, Cascade Drilling, Inc. (Cascade) drilled five soil borings at the locations shown in Figure 2. The drillers advanced the borings with a track-mounted hollow-stem auger drilling rig, using 8-inch outside diameter continuous flight augers.

HWA field staff (geologist, engineer, or sampler) collected soil samples at 2.5 to 5-foot intervals, starting at approximately 2.5 feet bgs. The soil samples were collected through the hollow stem of the auger using a Dames & Moore split spoon sampler, driven ahead of the auger bit.

HWA completed one soil boring using a stainless steel hand auger. Soil samples were collected using pre-cleaned stainless steel scoops directly from the auger.

All soil samples were transferred from the sampling device to laboratory-provided glassware, placed in a cooler with "blue ice" and transferred under chain-of-custody protocol to the analytical laboratory.

HWA collected two to six soil samples from each soil and monitoring well boring. Shallow soil samples were selected from the soil borings for analyses. These samples were collected at depths of 2.5 bgs. Soil samples selected for analyses from the monitoring well borings were collected at the soil-ground water interface, typically 7.5 to 10 feet bgs. The remaining samples were archived by the laboratory for contingent analyses, if necessary. All sampling locations were field screened using a photo ionization detector (PID). No elevated PID readings were detected.

Figure 2 shows the sampling locations. Soil boring logs are included in Appendix B. Appendix C contains the laboratory analytical reports.

2.3 FIELD SCREENING INSTRUMENTS

HWA conducted field screening of soil from the borings for the presence of volatile organic vapors using a Mini-Rae PGM 75 photoionization detector (PID). Visual indications of contamination and odor were also noted. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors with ionization potentials less than the energy of the ultraviolet source (in this case, 10.6 eV). The PID is useful for providing qualitative information with respect to the presence and relative concentration of organic vapors. PID readings are shown on the boring logs.

The PID was calibrated with 100 parts per million isobutylene standard at the beginning of the day. Fifty to 100 milliliters of soil from a discrete depth were placed in a plastic bag, sealed, and permitted to sit at least 10 minutes prior to analyzing the vapor in the sample bag. The bag was then perforated by the PID sample tip to obtain the reading. Samples were screened with the PID when sufficient sample volume was available. Exact depths of field PID sample screening and concentration values were recorded on the boring logs.

2.4 DECONTAMINATION METHODS

To prevent potential cross-contamination of samples, Cascade steam cleaned drilling augers and rods between each boring. All sampling equipment was decontaminated prior to use with detergent solution, potable water, and deionized water.

2.5 WELL CONSTRUCTION

Cascade converted three of the soil borings to ground water monitoring wells. The monitoring wells were constructed using 2-inch-diameter, schedule 40, PVC casing, with 0.010-inch, mill slotted well screen. For the wells, 10 feet of well screen was installed, terminating at 17 to 25 feet below grade.

The wells were constructed in accordance with Washington Department of Ecology regulations. Flush mount wellheads were installed using steel road rated well covers with watertight gaskets. The well covers were completed flush with existing grade. The wells were provided with locking caps. HWA surveyed the relative elevation of each wellhead.

2.6 WELL DEVELOPMENT

After the wells were installed, they were developed to improve hydraulic connection and water clarity. Wells were developed by surging with a surge block and pumping. Development water was collected and stored for disposal or treatment.

2.7 WELL SAMPLING

At least 24-hours after the well installation and development, the wells were sampled in general accordance with EPA's low-flow ground water sampling protocol. The wells were purged using a peristaltic pump equipped with dedicated disposable polyethylene tubing. The wells were purged such that drawdown was kept to a minimum and until water parameters (pH, turbidity, conductivity, and dissolved oxygen) had stabilized.

All ground water samples were transferred to laboratory-provided glassware, placed in a cooler with "blue ice" and transferred under chain-of-custody protocol to the analytical laboratory.

2.8 INVESTIGATION DERIVED WASTE

The soil cuttings and decontamination water from the field investigation were placed in sealed drums at the site pending analytical results. The cuttings will be disposed at Rabanco as non-hazardous waste. The decontamination water will be treated at Emerald Services' facility and discharged to sanitary sewer under permit. The bill of lading and disposal documentation will be provided under separate cover. Disposable personal protective equipment (e.g., nitrile gloves) was discarded off-site as ordinary solid waste.

3.0 SAMPLE ANALYSES

OnSite Environmental Inc., of Redmond, Washington, analyzed the samples for the selected analytes by using the following test methods:

- Washington state total petroleum hydrocarbons in the diesel-range extended (method NWTPH-Dx) quantified against diesel, transformer oil, and/or heavy oil standards if any of these petroleum fractions were positively identified. Silica gel/acid cleanup was used to prevent roots and other non-contaminant organic material in the samples from affecting analytical results.
- Total MTCA Metals (arsenic, cadmium, chromium, lead, and mercury) by EPA method 6010B/7471A.
- Volatile Organic Compounds (VOCs) using U.S. Environmental Protection Agency (EPA) method 8260.
- Polychlorinated biphenyls (PCBs) using EPA method 8082.
- Pesticides using EPA method 8081A.
- Polynuclear Aromatic Hydrocarbons (PAHs) using EPA method 8270C/SIM

3.1 QUALITY CONTROL REVIEW

HWA reviewed quality control results of the analytical data. Surrogate recoveries, method blanks, laboratory duplicates, matrix spikes, and matrix spike duplicates were all within control limits with the following exceptions:

- The relative percent difference between the spike blank (SB) and spike blank duplicate (SBD) was outside control limits, although SB and SBD recoveries were each within control limits. Spikes are analytes added to the sample so results can be compared with the known added concentrations. Because all other QC parameters were within control limits, no further action was performed.
- The percent difference values for some pesticides in continuing calibration verification standards (CCVs) for soil and water analyses were outside control limits. Since the degradation of the CCV standards was reproducible after re-injecting the sample extracts, the CCV degradation was attributed to the sample matrix. Degradation of pesticides in the columns during analysis is a common issue with this method. No pesticides were detected in the ground water samples, and one pesticide (DDT) was detected in one soil/sediment sample (SED-2).
- Due to an interference, the practical quantitation limit (PQL) of arsenic in water samples was raised to 4.4 µg/l. This is below the applicable cleanup level of 5 µg/l.

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OnSite did not flag any other results with qualifiers, which would indicate that a given result was suspect. All samples were extracted and analyzed within holding times. Laboratory method blank analyses were all below detection limits. The trip blank did not contain any volatile organic compounds above laboratory detection limits. The field duplicates did not contain any analytes above laboratory detection limits, therefore RPDs could not be calculated.

The analyses of the six sediment samples, three soil samples, and three ground water samples collected between April 10 and April 20, 2006 are considered useable for the intended purpose.

4.0 RESULTS

4.1 SUBSURFACE CONDITIONS

Soil boring and monitoring well logs are included in Appendix B. Sediment sample descriptions are summarized on Table 1.

Based on HWA's observations at the subject property, the soils encountered during drilling typically consisted of medium-grained sand to depths of at least 20 feet. These soils appear to be dredged fill and did not appear to be native soils. Minor amounts of angular gravel fill and debris (concrete rubble) were observed at land surface. The adjacent Duwamish waterway has been heavily altered, with dredging and filling of oxbows during channelization of the river in 1918. For instance, the adjacent Turning Basin 3 was formerly an oxbow, which was dredged, and on-site soils may be associated with this work.

Ground water was encountered in the monitoring well borings at depths of approximately 14 to 15 feet bgs at the time of drilling. However, site water levels are affected by tidal variation of the Duwamish Waterway.

TABLE 1
SEDIMENT DESCRIPTIONS

	Location	Description	PID (ppm)
SED-7	North corner of rectangular embayment N47°30'46.8" N122°18'21.7"	Heavy seepage from bank into waterway. 0-12" soft, brown and gray slightly silty fine to medium SAND, wet	0
SED-8	N47°30'48.4" N122°18'21.1"	0-12" Soft gray, black and orange silty clay, wet	0

4.2 GROUND WATER FLOW DIRECTION AND GRADIENT

Ground water elevations based on water levels measured during ground water sample collection are summarized on Table 2. Based on the measured water level elevations, the approximate ground water gradient at the property is 0.009 ft/ft, and the ground water

flow direction is to the southeast. HWA also placed a datalogging pressure transducer into monitoring wells MW-1 and MW-3 between April 13 and 20, 2006 to record water level changes during that time. The water level data is provided as Figure 3. The water level in the wells demonstrates tidal influences from the Duwamish waterway, and varied by approximately two feet in well MW-3. Well MW-1, which is a more upland well, varied by less than one foot during the monitoring period.

TABLE 2
GROUND WATER LEVELS AND FIELD PARAMETERS

Parameter	MW-1	MW-2	MW-3
Water depth (ft TOC)	13.66	10.71	11.03
TOC relative elevation	15	10.92	11.43
Water elevation	1.34	0.21	0.4
pH	6.42	7.25	6.91
Conductivity ($\mu\text{S}/\text{cm}$)	653	2010	2450
Dissolved Oxygen (mg/L)	3.89	NA	NA
Temperature ($^{\circ}\text{C}$)	13.5	9.5	9.1

Ft TOC = Feet below top of casing
NA – Not available- equipment error

4.3 ANALYTICAL RESULTS

Soil analytical results are summarized in Table 3. Ground water samples are summarized in Table 4.

TABLE 3
SOIL ANALYTICAL DATA
(all results in milligrams per kilogram (mg/kg) except as noted)

Sample ID	SED 7	SED 8	BH-1-2.5	BH-2-2.5	BH-3-2.5	MW-1-10	MW-2-7.5	MW-3-7.5	Bkg *	MTCA A
Depth (feet)	1.5	1.5	2.5-4	2.5-3	2.5-4	10-12.5	7.5-9	7.5-9		
Petroleum Hydrocarbons										
Diesel			<28	<27	<28	<27	<28	<27		2000
Lube Oil			<57	<54	<56	<67	<56	<54		2000
MTCA Metals										
Arsenic	<14	<18	<11	<11	<11	<11	<11	<11	7	20
Cadmium	>0.69	<0.89	<0.57	<0.54	<0.56	<0.54	<0.56	<0.54	1	2
Chromium	7	18	9.7	7.6	10	7	4.8	6.6	48	2000/19**
Lead	9.2	57	<5.7	<5.4	<5.6	<5.4	<5.6	<5.4	24	250
Mercury	<0.35	<0.45	<0.28	<0.27	<0.28	<0.27	<0.28	<0.27	0.07	2
PCBs										
PCBs	ND	ND	ND	ND	ND	ND	ND	ND		1
Pesticides (µg/mg)										
Heptachlor	ND	77	ND	ND	ND	ND	ND	ND		222

MTCA-A – Ecology Chapter 173-340 WAC MTCA Method A soil cleanup levels for unrestricted land use

MTCA Method A and B cleanup levels are shown for reference only, as a guide to relative soil quality and potential impacts to the site.

µg/kg – micrograms per kilogram (= parts per billion)

ND – selected analytes not detected at reporting limits. See Appendix C for complete analyte list.

< – not detected at listed reporting limit

* – Bkg – Puget Sound Natural Background Soil Metals Concentrations (Ecology, 1994)

** – The Method A soil cleanup levels for Chromium are 19 mg/kg for Cr VI and 2000 mg/kg for Cr III. Analyses are for total chromium.

*** – No other PCBs or pesticides detected above reporting limits (see Appendix C for complete list of compounds analyzed).

TABLE 4
GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Sample ID	MW-1	MW-2	MW-3	MTCA A/B
Petroleum Hydrocarbons				
Petroleum hydrocarbons	ND	ND	ND	varies
VOCs				
Chloromethane	<0.20	0.47	<0.20	3.37 (B)
Total MTCA Metals				
MTCA Metals	ND	ND	ND	varies
PCBs				
PCBs	ND	ND	ND	0.1
Pesticides				
Pesticides	ND	ND	ND	varies
PAHs				
PAHs	ND	ND	ND	varies

MTCA A / B – Department of Ecology Model Toxics Control Act (MTCA) cleanup levels, Chapter 173-340 WAC, Method A / B soil cleanup levels, shown for reference only.

Mg/kg – milligrams per kilogram

NE – Not Established

ND – selected analytes not detected at reporting limits. See Appendix C for complete analyte list.

< - not detected at listed reporting limit

5.0 SUMMARY

None of the sediment or soil samples analyzed contained detectable concentrations of petroleum hydrocarbons or PCBs. Low concentrations (below MTCA soil cleanup levels) of chromium and lead were detected in sediment and soil samples. The pesticide heptachlor was detected in sediment sample SED 8 at 77 $\mu\text{g/kg}$, which is below the MTCA soil cleanup level. Pesticides were not detected in the remaining sediment or soil samples.

None of the ground water samples analyzed contained detectable concentrations of petroleum hydrocarbons, total metals, PCBs, or pesticides. The VOC chloromethane was detected in the MW-2 ground water sample at 0.47 $\mu\text{g/l}$, below the MTCA Method B ground water cleanup level of 3.37 $\mu\text{g/l}$. Chloromethane is commonly found in drinking water (as a breakdown product of chlorination), and may have been introduced into the aquifer during drilling, as five to ten gallons of potable water was added to the augers to control heave. Approximately forty gallons of water were pumped from each well during development.

Cleanup levels

Analytical results were compared to MTCA cleanup levels, as a screening level evaluation of the environmental quality of the subject property. Method A values are intended to be protective of all exposure pathways, but are only provided for a limited list of contaminants. These cleanup levels may not apply at this site, and do not necessarily trigger any cleanup action.

MTCA Method A levels are intended to provide conservative values, typically for voluntary or routine cleanups. MTCA states that the Method A values "*should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the soil/water must be restored to these levels at a site*". MTCA Method B cleanup levels are the universal cleanup levels that typically employ risk-based cleanup levels, and likewise do not necessarily trigger any cleanup action. Cleanup levels for a particular site are determined after evaluating appropriate exposure pathway endpoints (e.g., drinking water, nonpotable ground water, surface water, soil, wildlife, etc.) based on site use, contaminant distribution, etc. The actual clean up *standard* is then based on the calculated cleanup levels, measured at the point of compliance.

Depending on the planned site use and improvements, other regulatory standards may apply, e.g., sediment, surface water quality standards, ecological, toxicity, or standards specific to the Duwamish Superfund Site cleanup.

6.0 RECOMMENDATIONS

6.1 SEDIMENTS

Metals and pesticides were detected in two sediment samples, however, the extent of affected areas was not delineated as part of this project. Additionally, areas of unknown contamination may be present at the subject property in areas that were not assessed and could be encountered during future excavation. Concentrations detected may be consistent with area-wide conditions along the Duwamish waterway. HWA recommends sampling and analysis of any sediments excavated or removed during construction, depending on disposal plans for the sediments (i.e., on- or off-site).

6.2 SOILS

None of the selected analytes tested for in soil samples were detected above MTCA cleanup levels. Based on these findings, no additional testing of soils during construction is recommended, in the absence of field evidence of soil contamination. Areas of unknown contamination may be present at the subject property in areas that were not assessed and could be encountered during future excavation.

6.3 CONSTRUCTION IMPACTS

Results of this study should be evaluated by the designing engineer with respect to the planned wetlands enhancements. Sampling and analysis should be performed consistent with planned disposition of the excavated materials, and as required by the receiving facility. If excavated sediments or soils can be reused on site, little or no sampling may be required.

Construction bid documents (plans and specifications) should include all analytical results and provisions for contaminated soil handling, treatment/disposal, and health and safety requirements. Net export or unsuitable soil or sediment excavated for construction that does not contain contaminants exceeding cleanup levels may still require treatment or disposal at a licensed (i.e., RCRA Subtitle D) facility, as many fill sites will not accept soils with detectable concentrations of contaminants. If excavated materials are disposed off-site, property owners at the receiving site should be notified of the results of this study and any additional testing information available at that time. Criteria for unrestricted use of soils may be lower than some cleanup levels. Soils with contaminant concentrations above detection limits but below cleanup levels should not be used as fill near surface or ground water.

Disposal of sediments at a licensed facility or landfill may require dewatering (decanting), with appropriate management of the decanted water. Material transported to such facilities generally must pass the paint filter test (i.e., no free draining water). Other options for management, transportation, and disposal of wet sediments may become available in conjunction with the Duwamish River Superfund cleanup, as cleanup activities will be generating large volumes of sediment waste.

Offshore disposal of sediments would require testing under the Puget Sound Dredged Disposal Analysis (PSDDA) program, although none of the analytes tested for in sediments during this study exceeded PSDDA screening levels for offshore disposal. This option is not recommended due to the small quantity of sediment anticipated.

6.4 GROUNDWATER

The VOC chloromethane was detected in a groundwater sample at the site, but this detection may be attributed to chlorinated drinking water used during well installation and HWA does not recommend further assessment. However, the monitoring wells installed during this study may be left in place for water level and tidal influence monitoring to aid in wetland and cove design and construction planning.

6.5 OTHER ISSUES

Subsurface stormwater utilities are present on the southeastern portion of the subject property. Any site design and activities should take action to avoid these utilities, and to coordinate with the appropriate utility owner(s) prior to any subsurface activities.

7.0 REFERENCES

Washington State Department of Ecology, *Natural Background Soil Metals Concentrations in Washington State*, Toxics Cleanup Program, Publication No. 94-115, Charles San Juan, October 1994.

8.0 LIMITATIONS

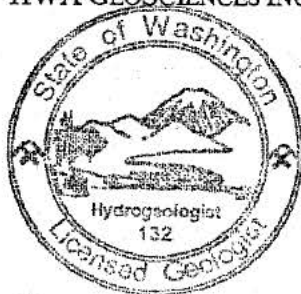
The conclusions expressed by HWA are based solely on material referenced in this report. Observations were made under the conditions stated. Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the area at the time the report was prepared. No warranty, expressed or implied, is made. Experience has shown that subsurface soil and ground water conditions can vary significantly over small distances. It is always possible that contamination may exist in areas that were not sampled. HWA's findings and conclusions must not be considered as scientific or engineering certainties, but rather as our professional opinion concerning the significance of the limited data gathered and interpreted during the course of the assessment.

This study and report have been prepared on behalf of Seattle Fleets and Facilities, for the specific application to the subject property. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

We appreciate the opportunity to provide professional services on this project. Please feel free to call us if you have any questions or need more information.

Sincerely,

HWA GEOSCIENCES INC.



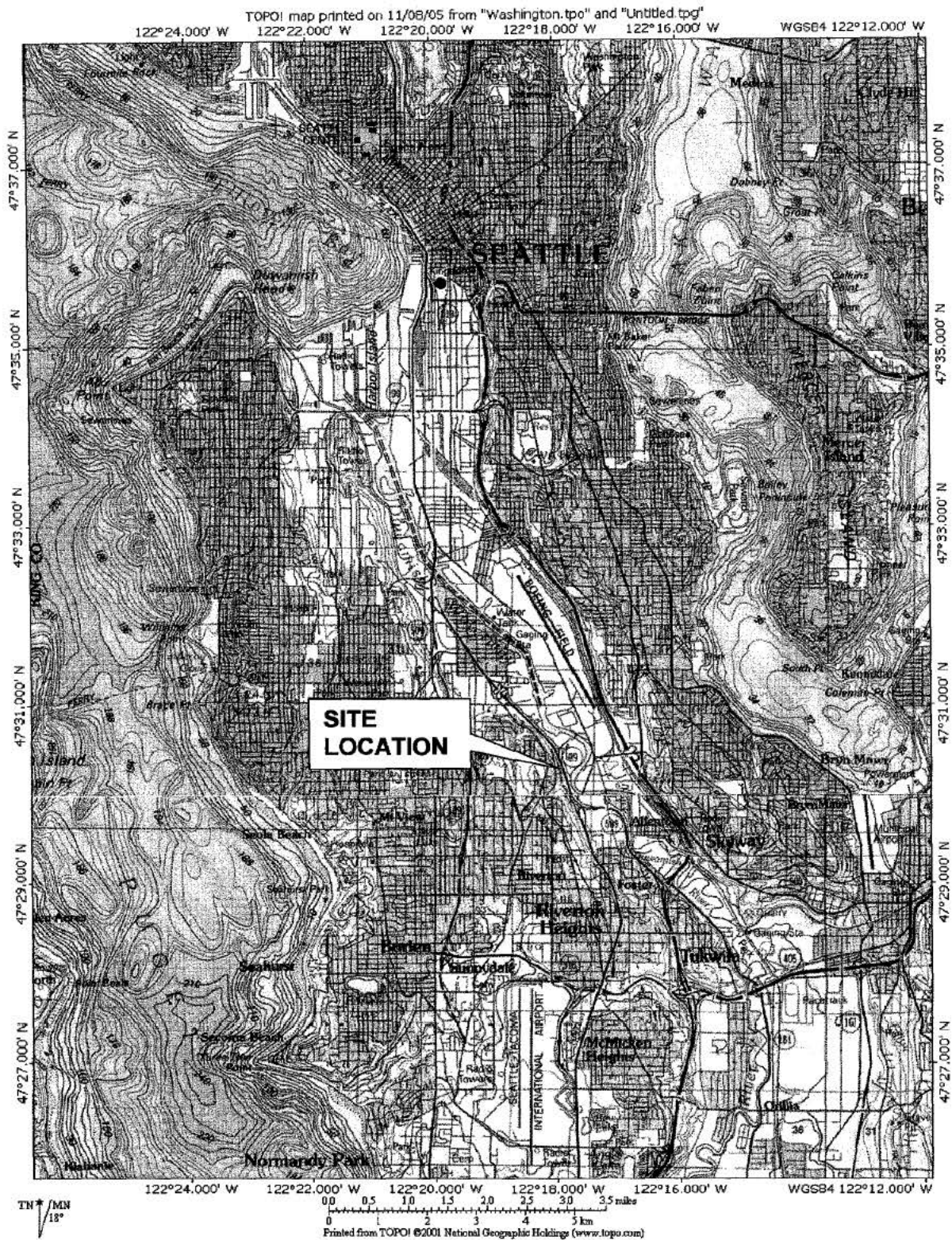
VANCE ATKINS

Vance Atkins, LG, LHG
Senior Hydrogeologist



Arnie Sugar

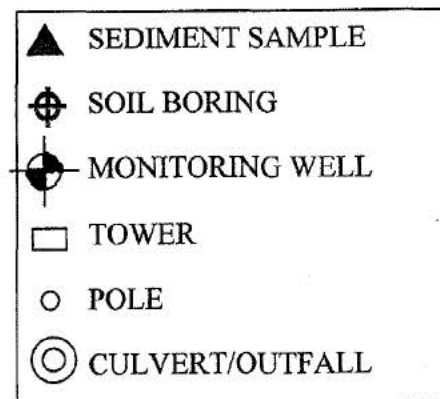
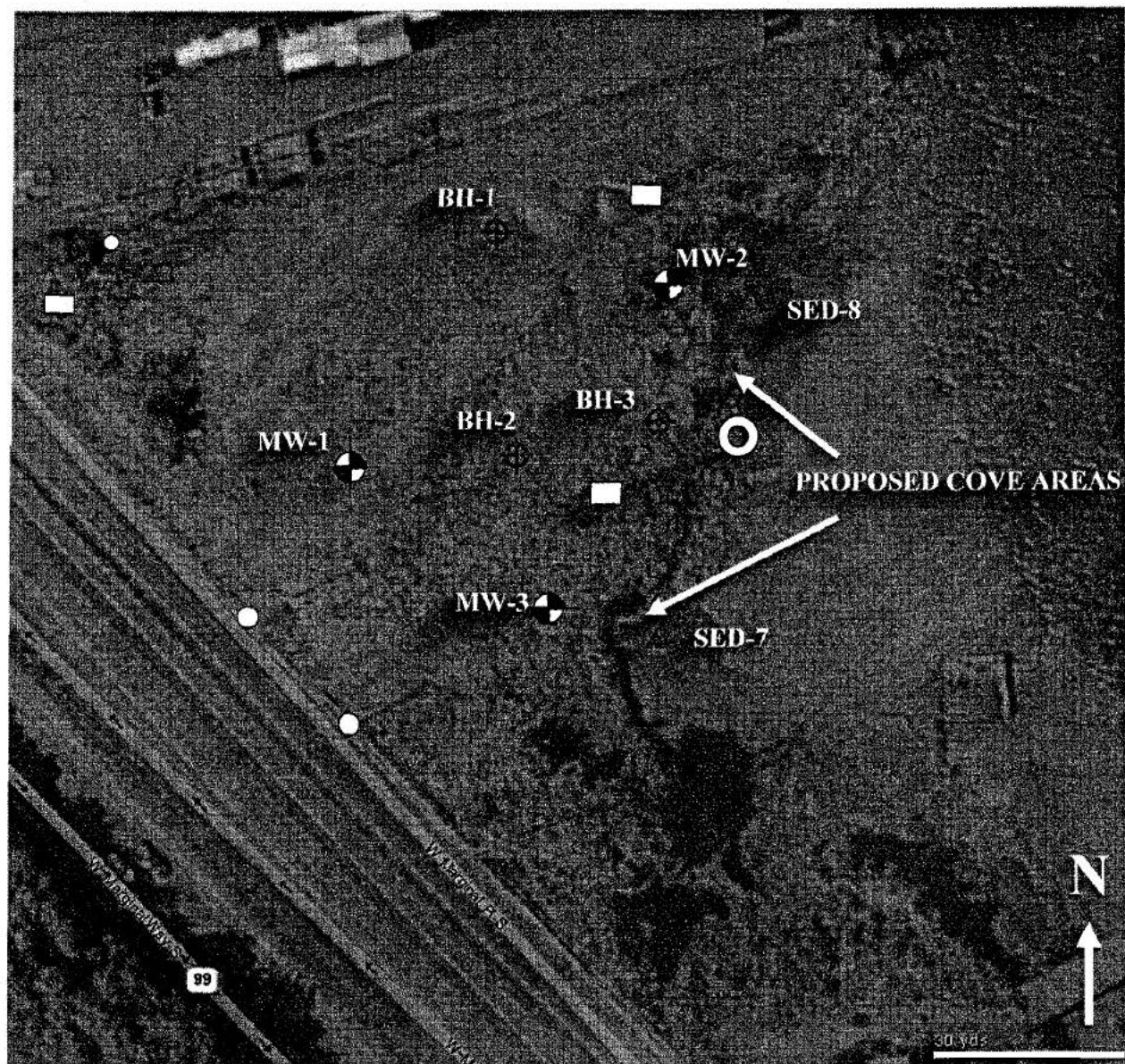
Arnie Sugar, LG, LHG
Vice President



HWA
HWA GEOSCIENCES INC.

SEATTLE FLEETS & FACILITIES
DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

FIGURE 1
SITE LOCATION MAP
PROJECT NO.: 2006-034



HWA GEOSCIENCES INC.

EXPLORATION PLAN

SEATTLE CITY LIGHT
DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

FIGURE NO.

2

PROJECT NO.

2006-034

TABLE 3
SOIL ANALYTICAL DATA
(all results in milligrams per kilogram (mg/kg) except as noted)

Sample ID	SED 7	SED 8	BH-1-2.5	BH-2-2.5	BH-3-2.5	MW-1-10	MW-2-7.5	MW-3-7.5	Bkg *	MTCA A
Depth (feet)	1.5	1.5	2.5-4	2.5-3	2.5-4	10-12.5	7.5-9	7.5-9		
Petroleum Hydrocarbons										
Diesel			<28	<27	<28	<27	<28	<27		2000
Lube Oil			<57	<54	<56	<67	<56	<54		2000
MTCA Metals										
Arsenic	<14	<18	<11	<11	<11	<11	<11	<11	7	20
Cadmium	>0.69	<0.89	<0.57	<0.54	<0.56	<0.54	<0.56	<0.54	1	2
Chromium	7	18	9.7	7.6	10	7	4.8	6.6	48	2000/19**
Lead	9.2	57	<5.7	<5.4	<5.6	<5.4	<5.6	<5.4	24	250
Mercury	<0.35	<0.45	<0.28	<0.27	<0.28	<0.27	<0.28	<0.27	0.07	2
PCBs										
PCBs	ND	ND	ND	ND	ND	ND	ND	ND		1
Pesticides (µg/mg)										
Heptachlor	ND	77	ND	ND	ND	ND	ND	ND		222

MTCA-A – Ecology Chapter 173-340 WAC MTCA Method A soil cleanup levels for unrestricted land use

MTCA Method A and B cleanup levels are shown for reference only, as a guide to relative soil quality and potential impacts to the site.

µg/kg – micrograms per kilogram (= parts per billion)

ND – selected analytes not detected at reporting limits. See Appendix C for complete analyte list.

< – not detected at listed reporting limit

* – Bkg – Puget Sound Natural Background Soil Metals Concentrations (Ecology, 1994)

** – The Method A soil cleanup levels for Chromium are 19 mg/kg for Cr VI and 2000 mg/kg for Cr III. Analyses are for total chromium.

*** – No other PCBs or pesticides detected above reporting limits (see Appendix C for complete list of compounds analyzed).

TABLE 4
GROUND WATER ANALYTICAL DATA
(all results in micrograms per liter (µg/l) except as noted)

Sample ID	MW-1	MW-2	MW-3	MTCA A/B
Petroleum Hydrocarbons				
Petroleum hydrocarbons	ND	ND	ND	varies
VOCs				
Chloromethane	<0.20	0.47	<0.20	3.37 (B)
Total MTCA Metals				
MTCA Metals	ND	ND	ND	varies
PCBs				
PCBs	ND	ND	ND	0.1
Pesticides				
Pesticides	ND	ND	ND	varies
PAHs				
PAHs	ND	ND	ND	varies

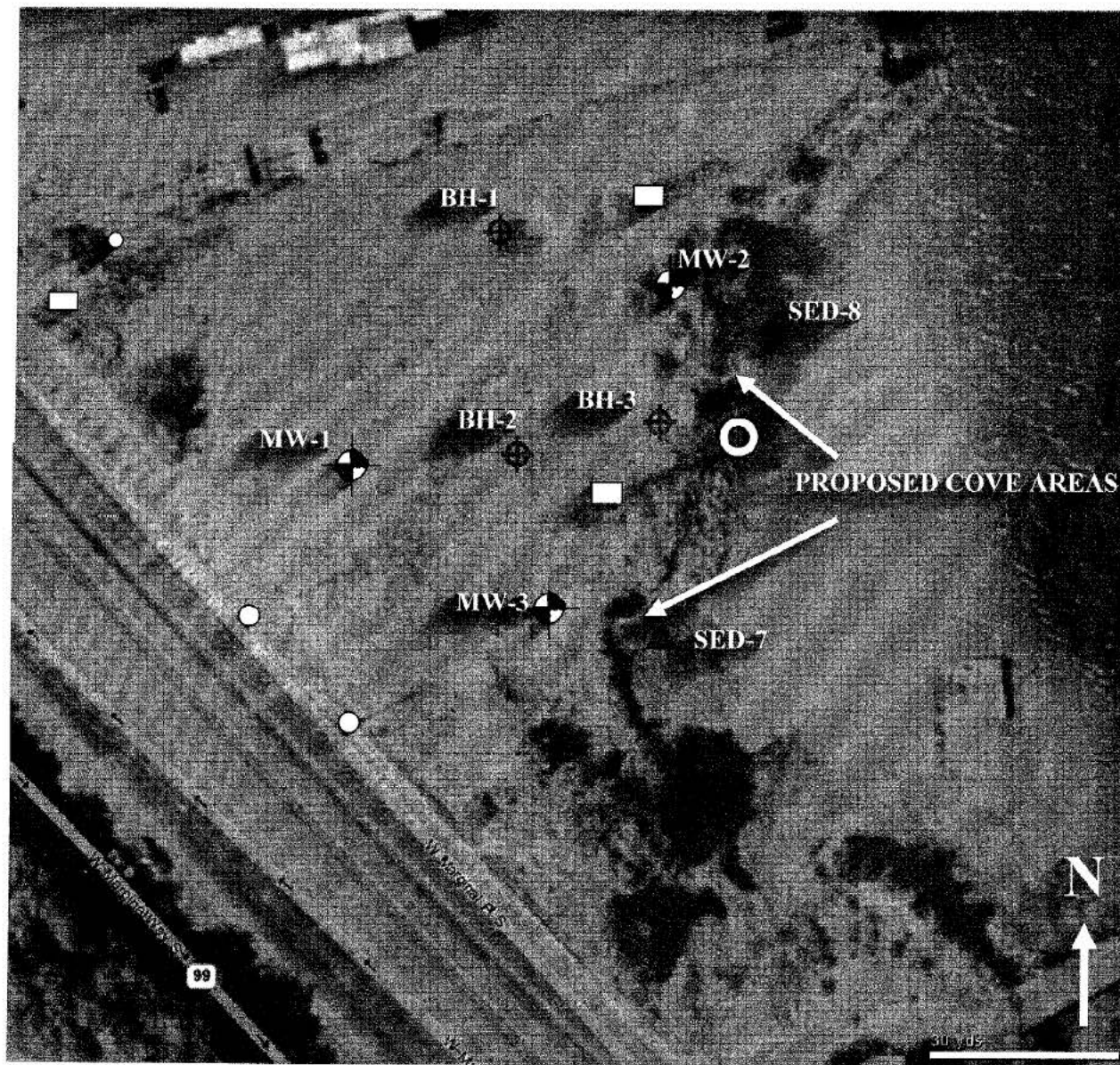
MTCA A / B – Department of Ecology Model Toxics Control Act (MTCA) cleanup levels, Chapter 173-340 WAC, Method A / B soil cleanup levels, shown for reference only.

Mg/kg – milligrams per kilogram

NE – Not Established

ND – selected analytes not detected at reporting limits. See Appendix C for complete analyte list.

< - not detected at listed reporting limit



- ▲ SEDIMENT SAMPLE
- ⊕ SOIL BORING
- ⊙ MONITORING WELL
- TOWER
- POLE
- ⊙ CULVERT/OUTFALL

EXPLORATION PLAN

SEATTLE CITY LIGHT
DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

FIGURE NO.

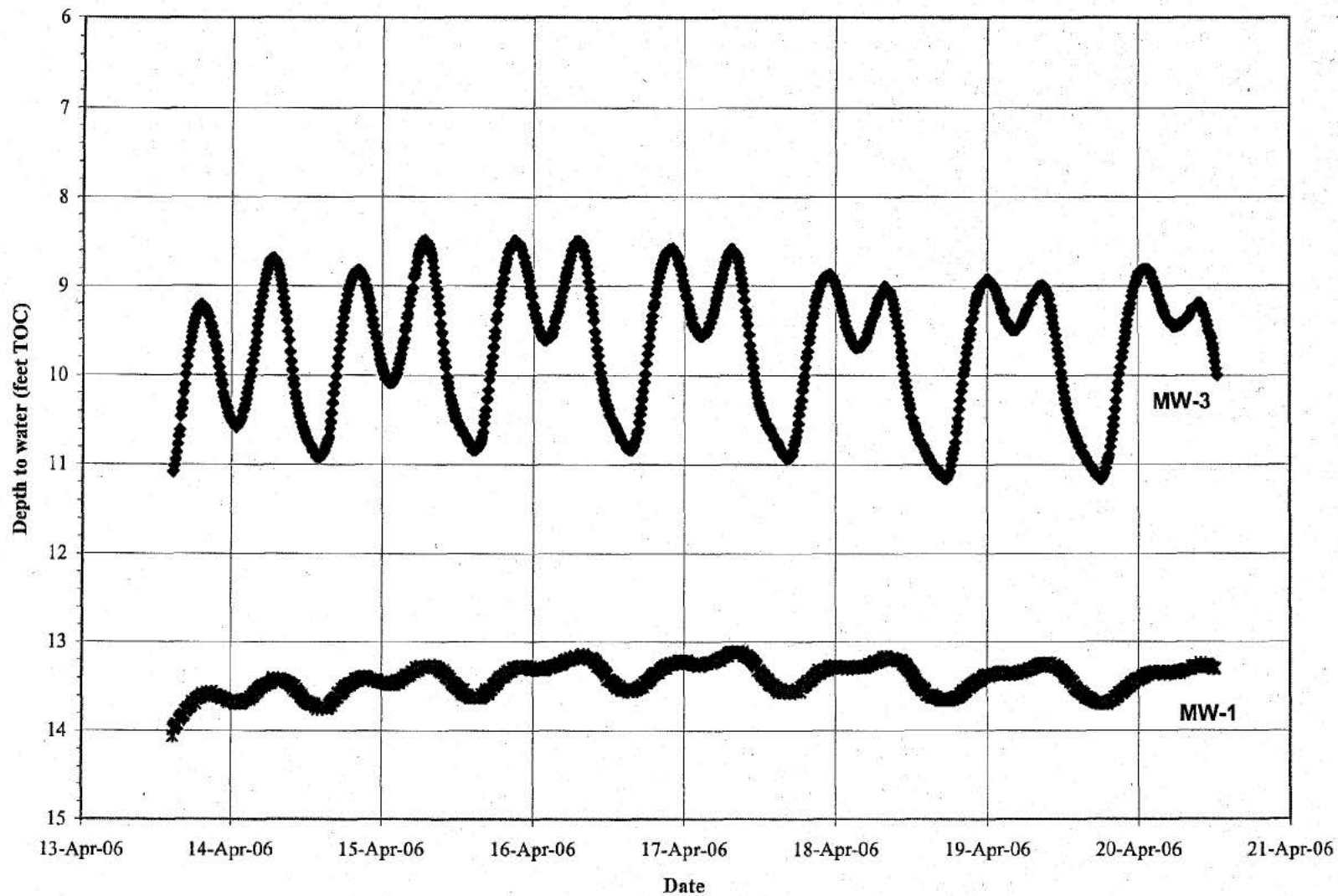
2

PROJECT NO.

2006-034



HWA GEOSCIENCES INC.



HWA GEOSCIENCES INC.

MW-1 & MW-3 GROUND WATER TRANSDUCER DATA

DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

FIGURE NO.

3

PROJECT NO.

2006-021

Appendix A

APPENDIX A

SAMPLING AND ANALYSIS PLAN

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
DUWAMISH SUBSTATION AND
GEORGETOWN SUBSTATION
SEATTLE, WASHINGTON
SAMPLING AND ANALYSIS PLAN**

Project No. 2006-034-22

May 12, 2006

Prepared For

Seattle Fleets and Facilities



HWA GEOSCIENCES INC.

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**PHASE II
ENVIRONMENTAL SITE ASSESSMENT
DUWAMISH SUBSTATION AND
GEORGETOWN SUBSTATION
SEATTLE, WASHINGTON
SAMPLING AND ANALYSIS PLAN**

1.0 INTRODUCTION

This Sampling and Analysis plan provides the scope and rationale for HWA GeoSciences Inc. (HWA's) field sampling efforts associated with a site investigation conducted for Seattle Fleets and Facilities (SFF), on two properties located along the Duwamish Waterway (subject properties) being evaluated for potential wetland mitigation sites.

HWA prepared this plan in accordance with our understanding of the project, and Chapter 173-340-820 WAC in the Washington State Model Toxics Control Act (MTCA) Cleanup Regulations. The body of this plan outlines our field sampling and laboratory analytical methods.

1.1 PURPOSE AND OBJECTIVES

The purpose of this investigation is to investigate the potential presence of soil and sediment contamination that may present liability issues, health and safety concerns during construction, delay or affect construction, or require additional investigation or remediation costs.

1.2 PROJECT ORGANIZATION

Personnel involved with this project and roles are listed below :

Arnie Sugar, HWA project manager (425) 774-0106, cell (b) (6)
Vance Atkins, HWA (425) 774-0106, cell (206) 794-3124
Joan Rosenstock, SFF (206) 684 8541
Jeff Gansz, SCL Facility Manager (206) 755-4117
Brian Goss / John Murnane, Cascade Drilling (425) 485-8908
David Baumeister, OnSite Environmental, Inc. (425) 883-3881

1.3 PROJECT SCHEDULE

A proposed project schedule is shown below, assuming no delays due to site access issues:

	Week 0	1	2	3	4
Notice to Proceed	x				
Work plans	xxxxxxx				
Schedule sampling	xxxxxxx				
Sampling		xx			
Laboratory analysis		xxxxx			
Draft Report				xxxxxxxxx	

1.4 SITE LOCATION

1.4.1 Georgetown Pump Station

The approximately 0.27 acre subject property is located at 7551 8th Avenue South, south of East Marginal Way South and adjacent to the Duwamish Waterway, in the Georgetown neighborhood of Seattle, Washington. The pump house was built in about 1900, and was used to pump water from the Duwamish Waterway to the Georgetown steam plant.

HWA conducted a limited Phase II ESA at the Georgetown Pump Station. Results are summarized in the HWA *Limited Environmental Site Assessment, Georgetown Pump Station 7551 8th Avenue South, Seattle, Washington* report dated February 6, 2006. We understand SFF plans site improvements for areas outside the parcel investigated in the HWA study, and requests additional testing. HWA will conduct sampling using hand augers or sediment coring in near-shore sediments in the waterfront area at the south end of 8th street and additional sampling along the shoreline of the Georgetown Pump Station Parcel in areas the City proposes to excavate or modify.

HWA will also employ a subcontracted hollow stem auger drilling rig to advance three soil borings. The borings will be advanced to the ground water table (anticipated 10 to 20 feet below grade) and will be converted to ground water monitoring wells, with flush-mount surface completions. Areas proposed for investigation are shown on Figure 1.

1.4.2 Duwamish Substation

The approximately 2.7 acre subject property is located east of West Marginal Way Place, south of the intersection with South 96th Street and adjacent to the Duwamish Waterway, in the Beverly Park neighborhood of Seattle, Washington.

HWA is performing a Phase I Environmental Site Assessment (ESA) of the subject property in conjunction with the preparation of this SAP. Based on the results of the Phase I ESA, areas of increased potential for environmental contamination will be investigated. Areas tentatively proposed for investigation are shown on Figure 2.

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HWA will employ a subcontracted hollow stem auger drilling rig to advance soil borings. Three borings will be advanced to the ground water table (anticipated 15 to 20 feet below grade), and three borings will be advanced to 6.5 feet, to characterize fill soils.

HWA will use stainless steel hand augers or sediment coring devices in two accessible (i.e., not armored with large riprap) shoreline areas to collect near shore sediment samples. Sediment sampling will be scheduled at low tide.

2.0 SAMPLING

The scope of work for the environmental assessment is summarized below:

- 1) Review available data
- 2) Prepare project work plan, and health and safety plan
- 3) Collect sediment samples at selected shoreline locations
- 4) Drill and sample 3 monitoring wells
- 5) Collect soil samples from soil borings
- 6) Collect ground water samples from ground water monitoring wells
- 7) Submit samples for laboratory analysis
- 8) Prepare site assessment report

Planned site sampling is described in the following sections

2.1 SOIL BORING AND MONITORING WELL INSTALLATION

2.1.1 Underground Utilities/Site Access

HWA will attempt to locate underground utilities by calling the Utilities Underground Location Center before drilling. HWA will also subcontract a private locating service (APS, Inc.) to attempt to locate and mark underground utilities at proposed boring locations. PVC and concrete utilities can not be located.

2.1.2 Soil Boring and Sampling

Hand Auger Borings

HWA will collect shallow sediment and soil samples at the subject property using a stainless steel hand augers or sediment coring devices in two accessible (i.e., not armored with large riprap) shoreline areas to collect near shore sediment samples. Sediment sampling will be scheduled at low tide at the approximate locations shown in Figures 1 and 2. The sediment samples will be advanced to a depth of approximately 1.5 feet below ground surface (bgs). The HWA geologist will collect soil samples continuously to the total depth of the borings.

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At each sampling interval, the geologist will log the soil samples and obtain and record pertinent information including soil sample depths, stratigraphy, ground water occurrence, and any visual or olfactory observations regarding the presence of contamination. Soil classifications presented on exploration soil logs will be based on visual and laboratory observations, in general accordance with ASTM D-2487, ASTM D-2488, and the Unified Soil Classification System (USCS).

HWA will screen soil samples by photoionization detector (PID) headspace analysis. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. The geologist/engineer collecting samples will place approximately two ounces of soil in a resealable (i.e. ziplock) plastic bag with ample air headspace. After a minimum of five minutes at ambient temperature, the sampler will agitate the sample for ten seconds, insert the PID probe through a small opening in the plastic bag, and record the highest reading within ten seconds.

Hollow-Stem Auger Borings

Under subcontract to HWA, Cascade Drilling (Cascade) will drill soil borings at the approximate locations shown in Figures 1 and 2. The drillers will advance the borings with a truck-mounted hollow-stem auger drilling rig, using 8-inch outside diameter continuous flight augers. They will place all soil boring cuttings in sealed, labeled drums in a selected location at the site pending analytical results. All field work will be supervised by an HWA geologist or engineer.

Maximum boring depth will be 20 to 25 feet (at least 5 feet below the ground water surface). HWA field staff (geologist, engineer, or sampler) will collect soil samples at a minimum of 5 foot intervals, starting at or above five feet below grade. They will collect soil samples through the hollow stem of the auger using a standard split spoon sampler, shelly tube, or modified split barrel sampler driven or pushed ahead of the auger bit, depending on soil conditions.

The soil samples will be logged and field screened as described above.

2.1.3 Well Construction

The monitoring wells will be constructed using 2-inch-diameter, schedule 40, PVC casing, with ten feet of 0.010-inch, mill slotted well screen. Well screens will be installed to intersect the ground water surface, as determined during drilling.

After drilling has advanced to the desired depth, casing will be installed. A bottom cap will be attached to the lowermost section of screened casing. Screened and blank casing will then be lowered into the center of the temporary drilling casing, one section at a time.

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After all of the PVC casing is installed, the top section will be temporarily capped to prevent entry of stray materials. Filter pack in the form of #10-20 mesh silica sand will be introduced into the annular space surrounding the PVC casing, while slowly raising the drilling casing. Sand will be kept in the annular space at all times to ensure complete filling of the well annulus with sand, and to prevent caving or sloughing of the borehole. The sand filter pack will be extended 2-3 feet above the top of the screen. The remainder of the well annulus will be filled to within 18 inches of the surface with hydrated granular or pelletized bentonite, or a bentonite slurry.

Flush mount wellheads will be installed using steel road rated well covers with watertight gaskets. The well covers will be completed flush with existing grade. The wells will be provided with locking caps. HWA will survey the relative elevation of each wellhead.

2.1.4 Well Development

After the wells are installed, they will be developed to improve hydraulic connection and water clarity. Wells with ground water in them will be developed by surging with a surge block and pumping or bailing. Development water will be collected and stored for disposal or treatment.

2.1.5 Borehole Abandonment

After all soil borings not converted to monitoring wells reach their maximum depth and are sampled, the holes will be grouted to the ground surface using hydrated granular or powdered bentonite and the land surface patched or otherwise returned to its original condition.

2.1.6 Decontamination Procedures

To prevent potential cross-contamination of samples, we will apply appropriate decontamination procedures. Between sampling intervals in each boring, we will wash all sampling devices in a detergent solution, rinse with tap water and then rinse again with deionized water. Drillers will steam clean all augers, rods, and other downhole tooling between boring locations.

2.1.7 Soil Analysis

We will submit soil samples to the analytical laboratory for the following analyses:

Analysis	Method
Petroleum Hydrocarbons – unknown*	NWTPH-HCID
Petroleum Hydrocarbons - gasoline	NWTPH-G/BTEX
Petroleum Hydrocarbons – diesel, oil	NWTPH-Dx
MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA # 6010/7000 series

Pesticides/PCBs	EPA #8082
Volatile organic compounds (VOCs)	EPA #8260 / 5035A
Polynuclear aromatic hydrocarbons (PAHs)	EPA #8270

*HWA will use the HCID (hydrocarbon identification) analytical method in soil samples where there is no basis for knowing the type of hydrocarbons that may be present. We will request the more specific TPH as gasoline, diesel or oil analyses based on the HCID results.

HWA will distribute the analytical testing based on results of the Phase I Environmental Assessment and field screening results. Samples will be submitted for rush two day laboratory turnaround time. Follow-up analyses, based on initial analytical results (e.g., additional testing requested after HCID results) may result in a total turnaround time of up to one week.

Field staff will determine the number, depth and location of samples in the field, based on field screening results. Soil samples will initially be submitted for HCID analysis. Follow-up analysis will be specified based upon the HCID results and other indications of potential contamination. The sample bottle requirements are as follows:

Bottle Type	Method	Holding Time
4 oz. Glass	VOCs EPA # 8260	7 days
8 oz. Glass	NWTPH-HCID NWTPH-G NWTPH-Dx SVOCs EPA # 8270 Pesticides/PCBs # 8081 Metals #6000/7000 series	14 days

After collection, the samples will be labeled, chilled in a cooler to 4°C, and shipped to Onsite Environmental, Inc. (Onsite) for analysis.

HWA will allocate the analytical testing based on field screening results and sample recovery (e.g., if no ground water is encountered, we will submit additional soil samples, if strong odor is detected, we will request more VOC analyses, etc.) This flexible approach ensures the best use of resources to characterize the site based on the field data.

2.1.8 Method 5035A for Collection of VOC Soil Samples

Bottle Type	Method	Holding Time
(1) tared VOA w/methanol (high level) (2) tared VOA w/stir bar (low level) (1) 4 oz. glass jar (moisture)	NWTPH-G / 5035A VOCs / 5035A	14 days 48 hrs @4°C then 14 days freeze at lab

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VOAs are pre-weighed (tared) at the lab

- Do not add any labels, tape, etc.
- Keep the same cap with each VOA
- Minimize methanol loss: check cap tightness, minimize open times, etc.
- Weigh VOAs on day of sampling (field or office)
- Visual check for methanol loss - check all VOAs prior to sampling for consistency, reference marks when full
- Discard any suspect VOAs, note weights (w/o soil) on COC, methanol levels, etc. in field notebook

Collect Core Sample

- In place soils, surficial or excavation sidewall (<4' deep) - scrape off to fresh soils w/ clean stainless steel spoon, take core sample
- Backhoe bucket - scrape off to fresh soils w/ clean stainless steel spoon, take core sample
- Split spoon - core immediately after opening split spoon, if using liners, core from middle liner or inside end of outer liners (top one is usually slough)
- Geoprobe liner - slice open acetate liner, core immediately after opening

Soil types:

- Cohesive granular - use core
- Cemented (e.g. till) - break up with stainless steel spoon, place in VOA & cap as soon as possible
- Non cohesive (won't stay in core) - place in VOA & cap as soon as possible

Extrude core into VOA

- Wipe threads with clean tissue or dry wipe
- Cap VOA
- Label - ball point pen (e.g., write in the rain) only, no markers

Note in field notebook:

- Soil type, moisture
- Any bias e.g., gravels, organics (avoid both in core sample)
- Weather (temp, humidity, wind)
- Coring method used
- Preservation and storage method used

Note on COC:

- Empty vial weight

Health and Safety issues - Methanol is toxic and flammable

- Skin contact (use gloves), inhalation hazards (ensure adequate ventilation)
- Check shipping restrictions

Cross contamination: Methanol has a high affinity for VOCs (hence its use as a preservative and extraction solvent) and will adsorb VOCs from other sources, e.g., exhaust fumes, spray paint, sharpie, markers, etc.

2.2 GROUND WATER SAMPLING

Ground water samples will be collected from the monitoring wells after development. Ground water samples will be retrieved using a peristaltic pump. New pump tubing will be used at each location.

Monitoring wells will be purged before sample collection to obtain groundwater samples that are representative of the formation water. Wells will be purged and sampled using low-flow purging methods. Sampling staff will measure groundwater levels to the nearest 0.01-foot using a decontaminated electronic well probe prior to collection of samples. Prior to collection of groundwater samples, the wells will be purged by pumping a small volume of water to ensure sampled water represents aquifer conditions. The volume pumped will be determined in the field based on stabilization of field parameters: specific conductance, dissolved oxygen, and pH. Wells will be purged by very slowly lowering semi-rigid polyethylene tubing to a depth corresponding to roughly the midpoint of the screen, securing the tubing to prevent vertical movement, connecting it to a peristaltic pump, and then pumping at a rate not to exceed 0.5 liters/minute (0.13 gallons/minute). At a minimum, two pump and tubing volumes will be purged (1/2" I.D. tubing = 0.010 gallon/lineal foot, 0.17" I.D. tubing = 0.001 gallon/lineal foot = 5 ml/lineal foot). Samples will be collected once the parameter values have stabilized over the course of three sets of measurements as follows:

specific conductance	10 μ S/cm
dissolved oxygen	2 mg/L
pH	0.1

If a well can be pumped dry prior to reaching the desired purge volume, it will be allowed to recover prior to sampling, using the minimum time between purging and sampling that would allow collection of sufficient sample volume. Samples will be pumped directly into the appropriate containers, as provided by the laboratory. A Field Data Sampling Sheet (provided in Appendix A) will be filled out for each sample. New tubing will be used at each location.

Dissolved metals samples will be filtered through a disposable 0.45-micron filter at the time of sample collection. The filters will attach directly to the discharge tube of the sampling pump. The filter must be changed between sample points, or more frequently if clogging occurs. Samples that have been field-filtered or that require laboratory filtering must be noted on the Chain-of-Custody forms in the comments section. The laboratory will note which samples require filtering on the individual bottle labels.

2.2.1 Ground water Analysis

We will submit ground water samples to the analytical laboratory for the following analyses:

Analysis	Method
Petroleum Hydrocarbons - gasoline	NWTPH-G/BTEX
Petroleum Hydrocarbons - diesel, oil	NWTPH-Dx
Total* MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA # 6010/7000 series
Dissolved MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA # 6010/7000 series
Pesticides/PCBs	EPA #8082
Volatile organic compounds (VOCs)	EPA #8260
Polynuclear aromatic hydrocarbons (PAHs)	EPA #8270

* Both filtered and unfiltered metals samples will be collected; initial analysis will be for total (unfiltered) metals. HWA may request follow-up analysis for dissolved metals on selected filtered samples depending on the total metals results.

The sample bottle requirements are as follows:

Bottle Type	Analytes	PRESERVATIVE
(2) 40 ml VOA	NWTPH-Gx	HCl to pH < 2
1 liter amber glass	NWTPH-Dx	
(2) 40 ml VOA	VOCs	HCl to pH < 2
1 liter amber glass	PAHs	
1 liter amber glass	Pesticides/PCBs	
500 ml poly	Metals	HNO ₃ to pH < 2

After collection, the samples will be labeled, chilled in a cooler to 4°C, and shipped to OnSite for analysis.

Samples will be submitted for rush two day laboratory turnaround time. Follow-up analyses, based on initial analytical results may result in a total turnaround time of up to one week.

2.3 QUALITY ASSURANCE/QUALITY CONTROL

Samples will be collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for this investigation is to ensure that all laboratory and field data on which decisions are based are technically sound, statistically valid, and properly documented. There are two parts to the QA/QC program for this project: field and laboratory.

Field QA/QC includes proper documentation of field activities and sampling/handling

procedures, as described in Section 2.5. Field QA/QC samples will consist of the following:

- 1 trip blank per water sample shipment (archive for optional analysis for VOCs or TPH-Gas/BTEX depending on sample results)
- 1 field blank for the project (archive for optional analysis depending on sample results)
- 1 duplicate for ground water, if sample volume is sufficient

Duplicates are used to confirm analytical results from a given sample point. Duplicate samples are collected in the field using a matching set of laboratory-supplied bottles and sampling from the selected well, as requested. Each duplicate should be sampled by alternating between the regular and the duplicate sample bottles, proceeding in the designated sampling order (VOCs first). The well where the duplicate is collected must be identified on the field sampling data sheet. All duplicates shall be blind-labeled (i.e., the well designation is not listed on the sample bottle or Chain-of-Custody form). Once a duplicate is collected, it is handled and shipped in the same manner as the rest of the samples. Duplicate results will be reported in the laboratory results as separate samples, using the designation DUP-#).

Split samples are collected when a well is sampled with a third party. Split samples should be collected using the same method as a duplicate, alternating between sample bottles, and proceeding in the designated sampling order. The well at which a split sample is collected must be identified on the field sampling data sheet. Also note the condition of the bottles or preservatives, the sample-collection method (if different from the standard), and the selected third party laboratory.

Trip blanks are used to detect contamination that may be introduced in bottle preparation, in transit to or from the sampling site, or in the field. Trip blanks are samples of volatile-organic-free, laboratory-quality water (Type II reagent grade) that are prepared at the laboratory. They remain with the sample bottles while in transit to the site, during sampling, and during the return trip to the laboratory. Trip blank sample bottles are not opened at any time during this process. Trip blanks are to be reported in the laboratory results as separate samples, using the designation TB-#). Each sample cooler that includes bottles for VOC analysis must include a trip blank, whether it was requested or not.

Field blanks are used to detect contamination that may be introduced in the field. Field blanks will be prepared in the field by pumping laboratory reagent-quality water through new tubing and into the equipment blank bottles. The location at which the equipment blank is prepared must be identified on the field sampling data sheet. Field blank results will be reported in the laboratory results as separate samples, using the designation FB-#).

Equipment blanks are not anticipated because dedicated or disposable sampling equipment will be used.

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Laboratory QA/QC analyses provide information about accuracy, precision, and detection limits. Method-specific QA/QC samples may include the following, depending on the analysis:

- Method blanks
- Duplicates
- Instrument calibration verification standards
- Laboratory control samples
- Surrogate spiked samples
- Performance evaluation QC check samples

2.3.1 Data Evaluation

Data evaluation will include checking holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and Chain-of-Custody forms.

2.4 EQUIPMENT DECONTAMINATION

To prevent potential cross-contamination of samples, HWA will maintain appropriate decontamination procedures. Between sampling intervals, we will wash all sampling devices in a detergent solution, rinse with tap water and then rinse again with deionized water.

2.5 FIELD DOCUMENTATION AND CHAIN-OF-CUSTODY

The following sections describe the recording system for documenting all site field activities, and the sample chain-of-custody program.

2.5.1 Field Log Book

An accurate chronological recording of all field activities is vital to the documentation of any environmental investigation. To accomplish this, field team members will maintain field log books providing a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities.

2.5.2 Sample Identification

Following sample collection, field personnel will affix labels to each sample container. Samplers will use waterproof ink, plastic bags, or clear tape to ensure labels remain legible even when wet. Samplers will record the following information on the labels:

- Project name and number
- Sample identification number
- Date and time of collection

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- Required test methods
- Name of sample collector

2.5.3 Chain-Of-Custody Record

The objective of the chain-of-custody program is to allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Once a sample is collected, it becomes part of the chain-of-custody process. A sample is "in custody" when (1) it is in someone's possession, (2) it is within visual proximity of that person, (3) it is in that person's possession, but locked up and sealed (e.g., during transport), or (4) it is in a designated secure sample storage area. Sampling staff will complete a chain-of-custody record which will accompany each batch of samples. The record will contain the following information:

- Project name and number
- Names of sampling team members
- Requested testing program
- Required turnaround time
- Sample number
- Date and time collected
- Sample type
- Number of containers
- Special Instructions
- Signatures of persons involved in the chain of possession

When sample custody is transferred to another individual, the samples must be relinquished by the present custodian and received by the new custodian. This will be recorded at the bottom of the chain-of-custody report where the persons involved will sign, date and note the time of transfer.

Sampling team members will keep sample coolers in locked vehicles while not in active use or visual range. If couriers are used to transport samples, chain of custody seals will be affixed to sample coolers.

3.0 HEALTH AND SAFETY

HWA personnel conducting this field program are required to follow the health and safety protocol presented in the HWA site specific Health and Safety Plan. Subcontractors and other authorized visitors to the site are responsible for their own health and safety. The Health and Safety Plan will be made available to subcontractors and other site visitors who request it. Health and Safety precautions will be communicated to subcontractors by HWA personnel in site safety briefings at the beginning of each field day. To acknowledge review and comprehension of this plan, HWA personnel must sign the appropriate section included in the back of the document.

APPENDIX A

CHAIN OF CUSTODY FORM FIELD SAMPLING DATA SHEET



HWA GEOSCIENCES INC.

19730 64th Avenue West, Suite 200 Lynnwood, WA 98036

Tel: 425-774-0106 / Fax: 425-774-2714 / E-Mail: hwa@hongwest.com

FIELD SAMPLING DATA SHEET

Project Name: _____

Project Number: _____

Project Location: _____

Client/Contact: _____

Well Number: _____

Sample Number: _____

Weather: _____

Date: _____

WELL MONITORING:

Time	Well Depth	Depth to Water	Measuring Point (TOC?)	Measuring Point Elevation	Water Level Elevation	Gallons in Well (Pore Volume)

(2" case = 0.163 gal/ft)
(4" case = 0.633 gal/ft)

WELL PURGING:

Time	Method	Gallons	Pore Volumes	pH	Conductivity	Temperature		

WELL SAMPLING:

Time	Sampling Method	Sample Analysis	Container Number	Container Volume	Container Type	Field Filtered (Y/N)	Preservative	Iced (Y/N)

COMMENTS/NOTES:

(Include equipment used: Bailers, Filters, Well Probe, pH/Conductivity Meter, etc.)

Total # of Bottles: _____ Sampler: _____ Signature: _____



Chain of Custody and Laboratory Analysis Request

PAGE: of

HWA CONTACT: _____ PHONE: _____

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

SEA036885

Appendix B
















APPENDIX B

SOIL BORING LOGS

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000








USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS			
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravel (little or no fines)		GW	Well-graded GRAVEL	
				GP	Poorly-graded GRAVEL	
		More than 50% of Coarse Fraction Retained on No. 4 Sieve	Gravel with Fines (appreciable amount of fines)		GM	Silty GRAVEL
					GC	Clayey GRAVEL
	Sand and Sandy Soils	Clean Sand (little or no fines)		SW	Well-graded SAND	
				SP	Poorly-graded SAND	
		50% or More of Coarse Fraction Passing No. 4 Sieve	Sand with Fines (appreciable amount of fines)		SM	Silty SAND
					SC	Clayey SAND
Fine Grained Soils	Silt and Clay	Liquid Limit Less than 50%		ML	SILT	
				CL	Lean CLAY	
				OL	Organic SILT/Organic CLAY	
	Silt and Clay	Liquid Limit 50% or More		MH	Elastic SILT	
				CH	Fat CLAY	
				OH	Organic SILT/Organic CLAY	
Highly Organic Soils				PT	PEAT	



TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
PID	Photolonization Device Reading
PP	Pocket Penetrometer Approx. Compressive Strength (tsf)
SG	Specific Gravity
TC	Triaxial Compression
TV	Torvane Approx. Shear Strength (tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

	2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
	Shelby Tube
	3-1/4" OD Split Spoon with Brass Rings
	Small Bag Sample
	Large Bag (Bulk) Sample
	Core Run
	Non-standard Penetration Test (3.0" OD split spoon)

GROUNDWATER SYMBOLS

	Groundwater Level (measured at time of drilling)
	Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments.
(GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.



HWAGEOSCIENCES INC.

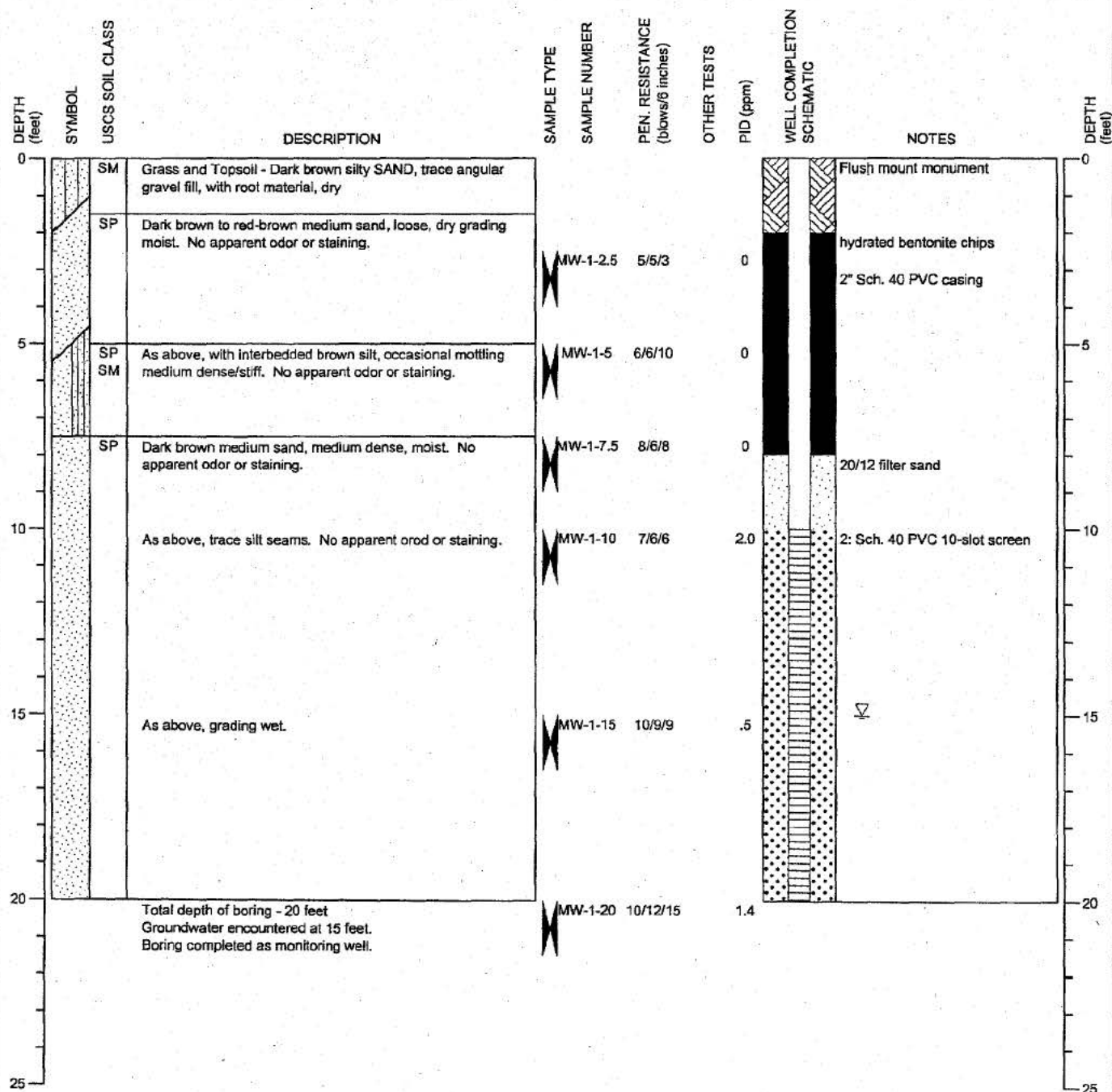
PHASE II ENVIRONMENTAL SITE ASSESSMENT
DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

LEGEND OF TERMS AND
SYMBOLS USED ON
EXPLORATION LOGS

DRILLING COMPANY: Cascade Drilling, Inc.
 DRILLING METHOD: HSA - CME 850 track rig
 SAMPLING METHOD: D&M Sampler/300 lb hammer
 LOCATION: Duwamish Substation, center of property

SURFACE ELEVATION: ± feet

DATE STARTED: 4/11/2006
 DATE COMPLETED: 4/11/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



HWA GEOSCIENCES INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

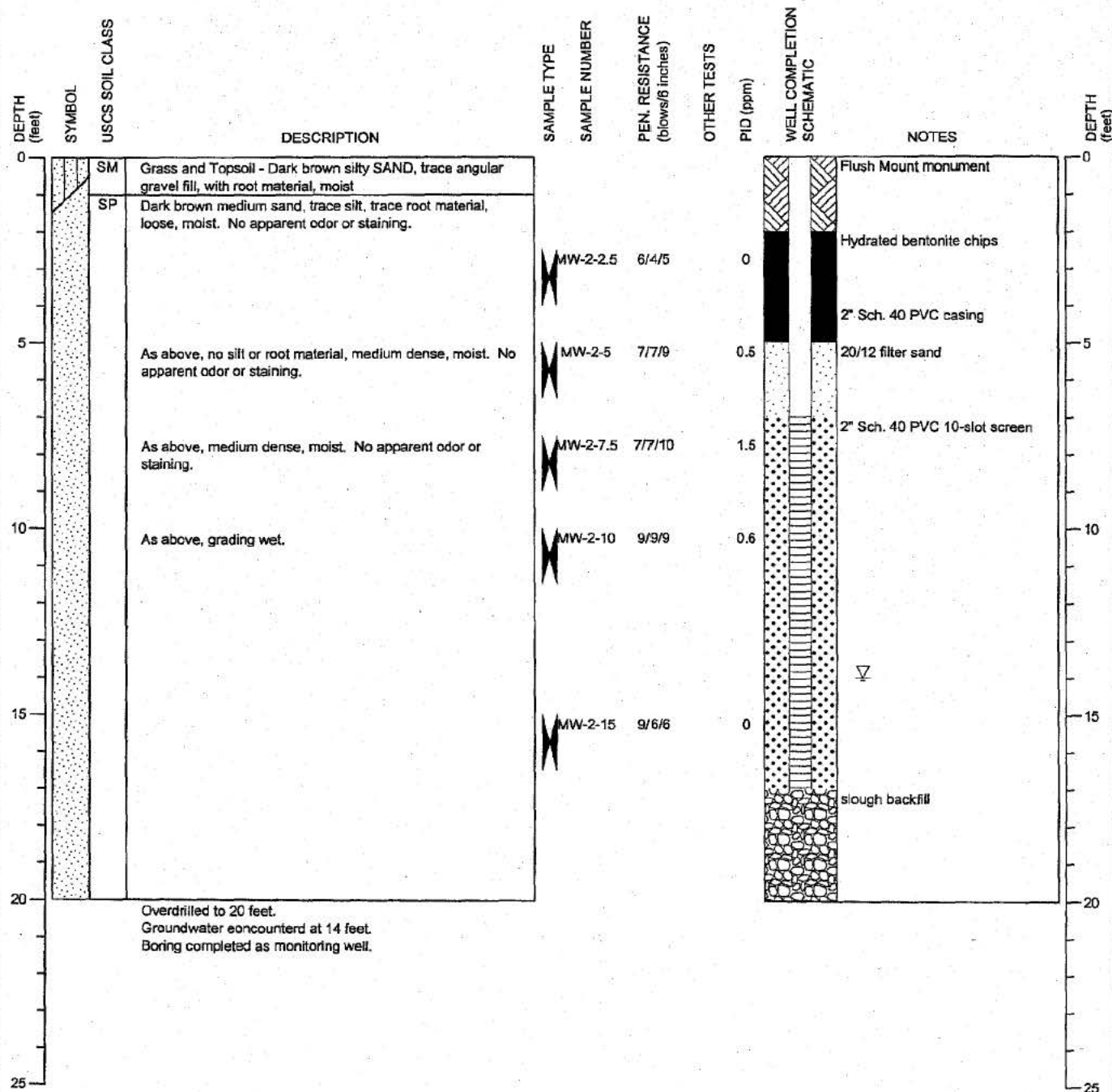
MONITORING WELL:
 MW-1

PAGE: 1 of 1

DRILLING COMPANY: Cascade Drilling, Inc.
 DRILLING METHOD: HSA - CME 850 track rig
 SAMPLING METHOD: D&M Sampler/300 lb hammer
 LOCATION: Duwamish Substation, northeast

SURFACE ELEVATION: ± feet

DATE STARTED: 4/11/2006
 DATE COMPLETED: 4/11/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



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PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

MONITORING WELL:
 MW-2

PAGE: 1 of 1

PROJECT NO.: 2006-034-22

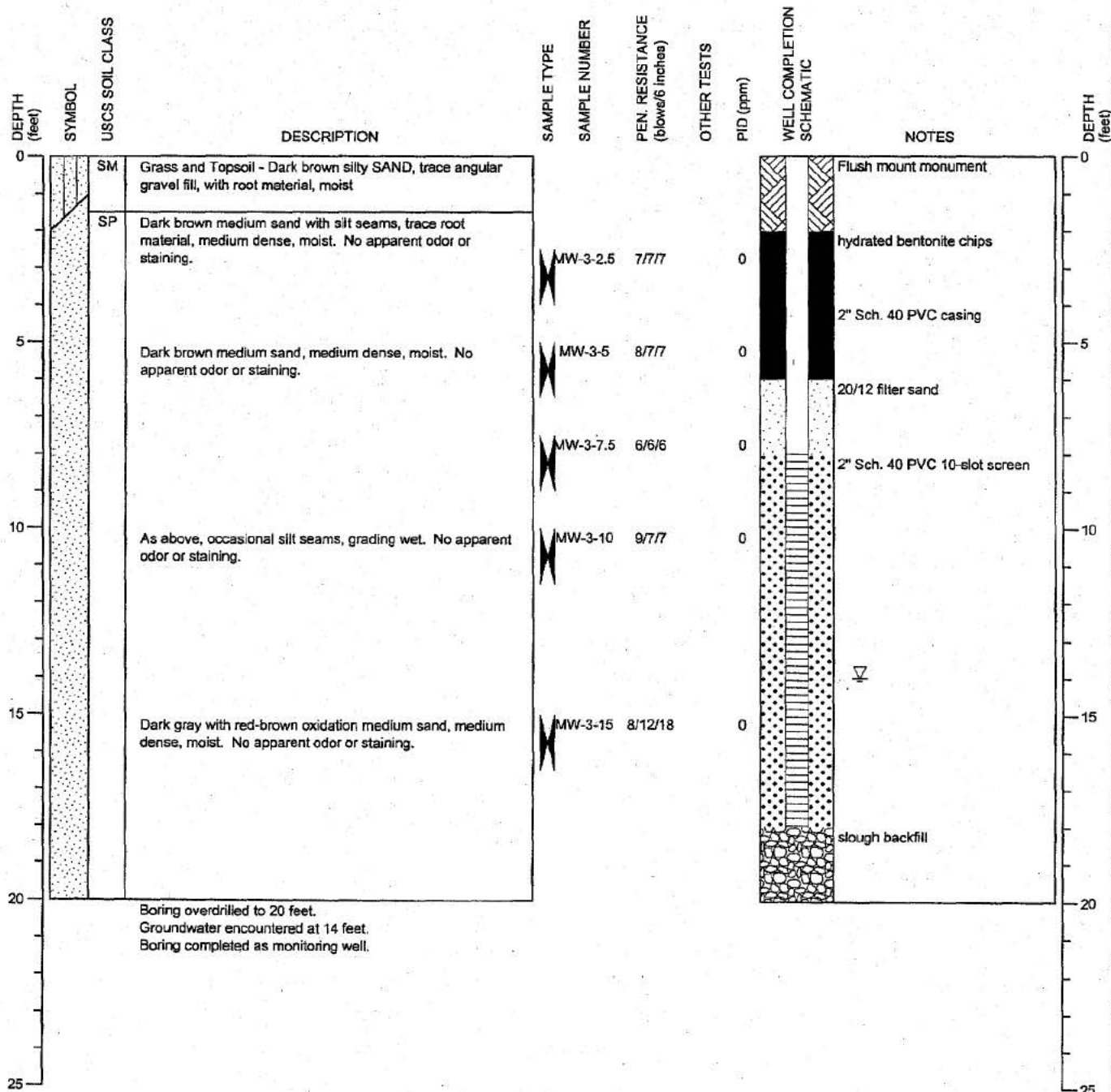
FIGURE:

B-3

DRILLING COMPANY: Cascade Drilling, Inc.
 DRILLING METHOD: HSA - CME 850 track rig
 SAMPLING METHOD: D&M Sampler/300 lb hammer
 LOCATION: Duwamish Substation, southeast

SURFACE ELEVATION: ± feet

DATE STARTED: 4/11/2006
 DATE COMPLETED: 4/11/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA
HWA GEOSCIENCES INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

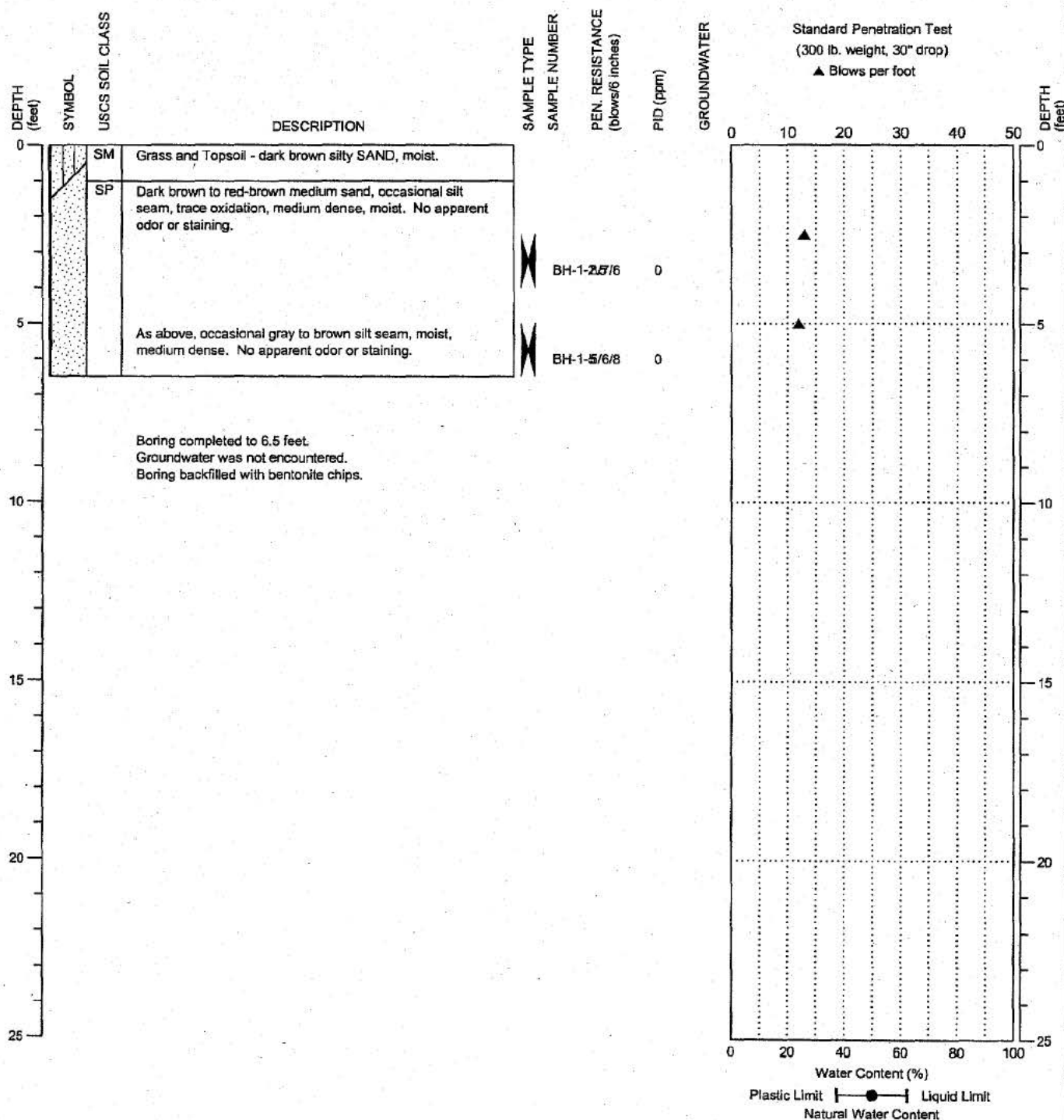
MONITORING WELL:
 MW-3

PAGE: 1 of 1

DRILLING COMPANY: Cascade Drilling, Inc.
 DRILLING METHOD: HSA - CME 850 Tracked Rig
 SAMPLING METHOD: D&M Sampler, 300 lb. Hammer
 LOCATION: Duwamish Substation, north central

SURFACE ELEVATION: ± feet

DATE STARTED: 4/11/2006
 DATE COMPLETED: 4/11/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA
 HWA GEOSCIENCES INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

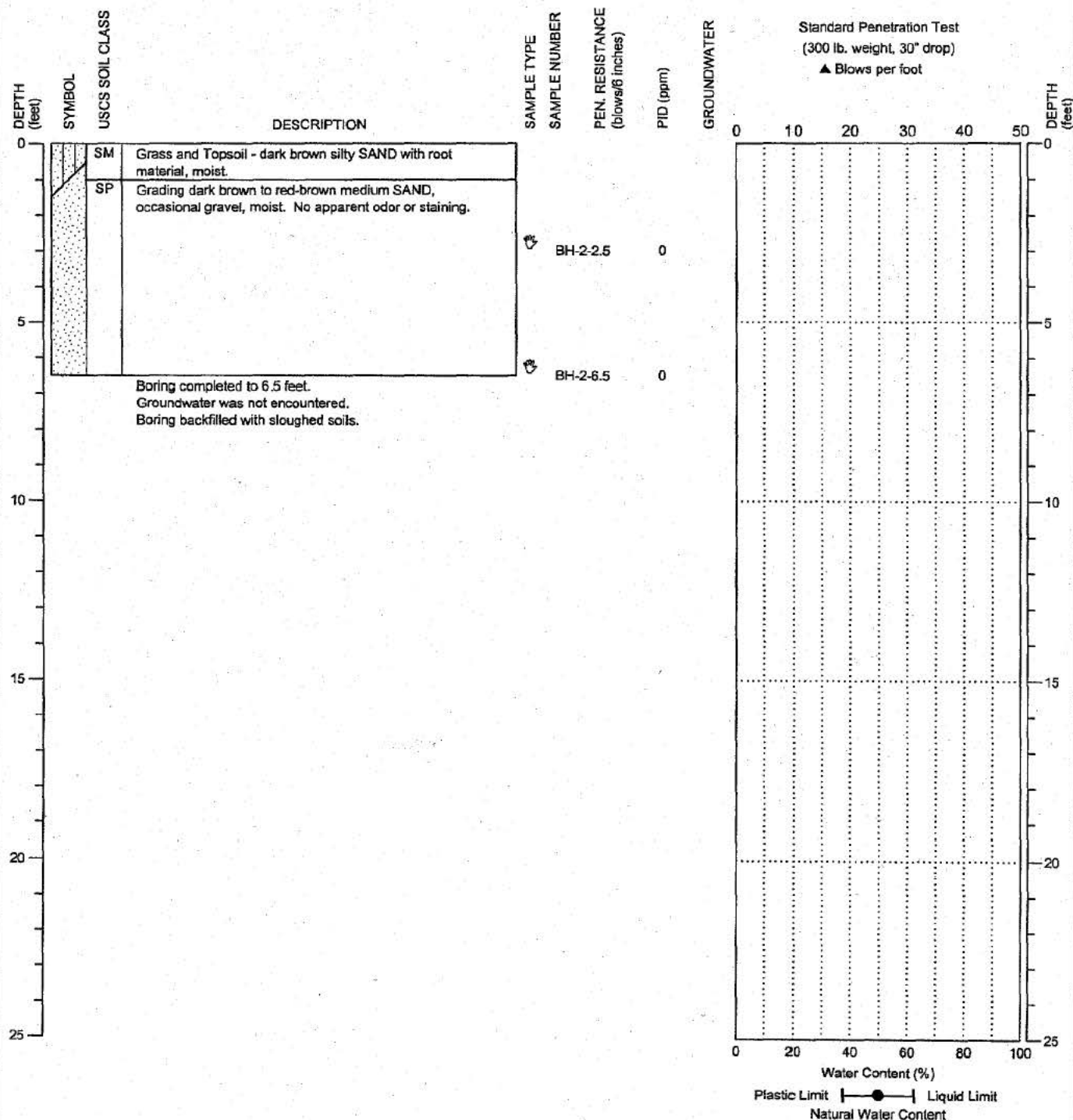
BORING:
 BH-1

PAGE: 1 of 1

DRILLING COMPANY: HWA GeoSciences
 DRILLING METHOD: Hand Auger
 SAMPLING METHOD: Grab
 LOCATION: Duwamish Substation, central

SURFACE ELEVATION: ± feet

DATE STARTED: 4/12/2006
 DATE COMPLETED: 4/12/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA
HWA GEOSCIENCES INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

BORING:
 BH-2

PAGE: 1 of 1

PROJECT NO.: 2006-034-22

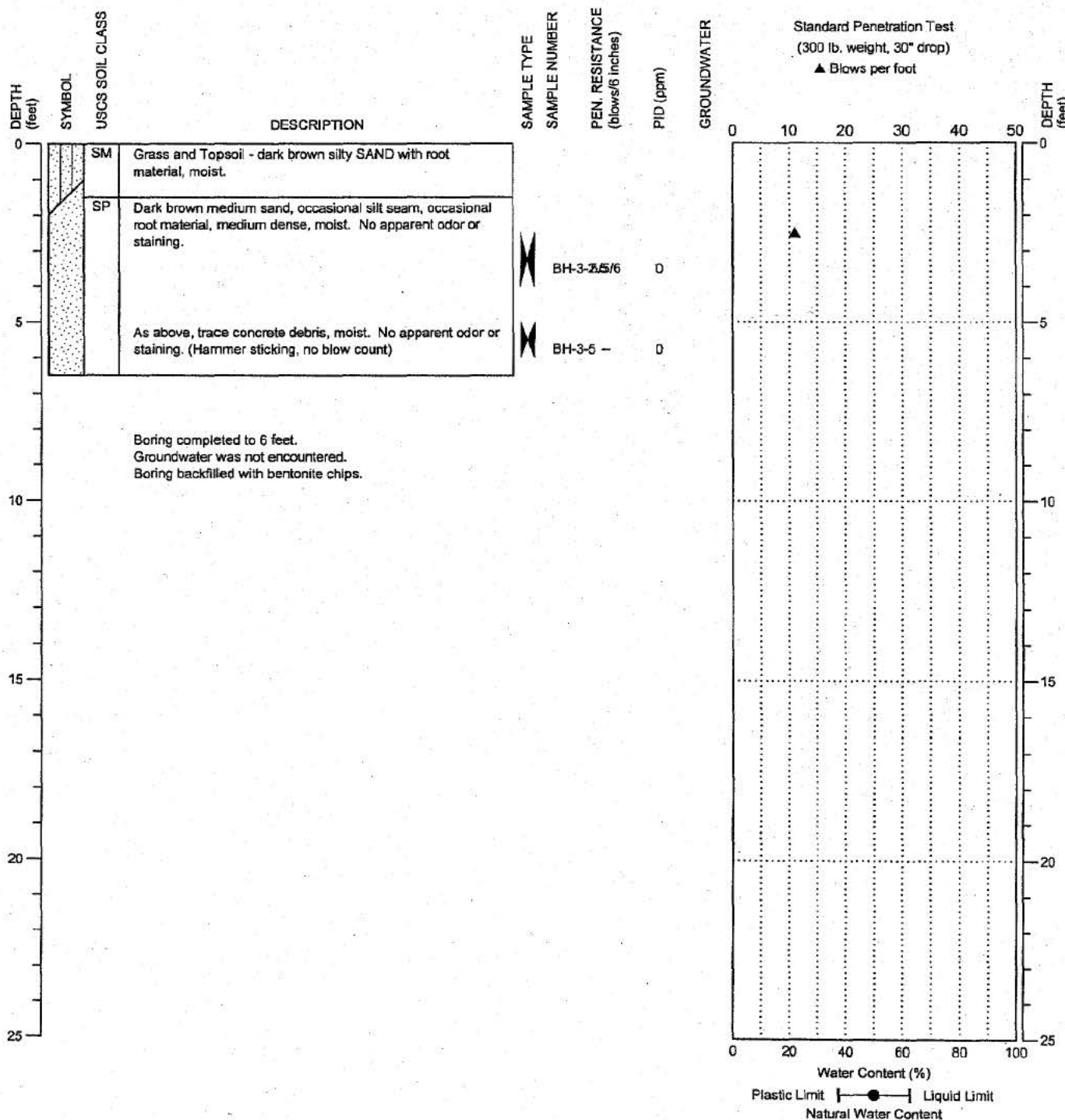
FIGURE:

B-6

DRILLING COMPANY: Cascade Drilling, Inc.
 DRILLING METHOD: HSA - CME 850 Tracked Rig
 SAMPLING METHOD: D&M Sampler, 300 lb. Hammer
 LOCATION: Duwamish Substation, east

SURFACE ELEVATION: ± feet

DATE STARTED: 4/11/2006
 DATE COMPLETED: 4/11/2006
 LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



HWA GEOSCIENCES INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT
 DUWAMISH SUBSTATION
 SEATTLE, WASHINGTON

BORING:
 BH-3

PAGE: 1 of 1

PROJECT NO.: 2006-034-22

FIGURE:

B-7

Appendix C

APPENDIX C

ANALYTICAL LABORATORY REPORTS



**OnSite
Environmental Inc.**

Analytical Testing and Mobile Laboratory Services

April 19, 2006

Vance Atkins
HWA GeoSciences, Inc.
19730 64th Avenue West, Suite 200
Lynnwood, WA 98036

Re: Analytical Data for Project 2006-034
Laboratory Reference No. 0604-075

Dear Vance:

Enclosed are the analytical results and associated quality control data for samples submitted on April 12, 2006.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



David Baumeister
Project Manager

Enclosures

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

Case Narrative
Page 1 of 2

Samples were collected on April 10 & 11, 2006 and received by the laboratory on April 12, 2006. They were maintained at the laboratory at a temperature of 2°C to 6°C except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Organochlorine Pesticides by EPA 8081A Analysis

Due to sample matrix effects, the percent difference values for the following analytes were greater than the quality control limit of +15% (low bias) on both columns in the following continuing calibration verification standard (CCV):

PESTCCV 0416-1: 4,4'-DDT and Methoxychlor
PESTCCV 0416-2: 4,4'-DDT and Methoxychlor
PESTCCV 0416-4: DCB, Heptachlor, Endrin, 4,4'-DDT, Methoxychlor, and Endrin Ketone.

The percent difference values for the following analytes were greater than the quality control limit of -15% (high bias) on both columns in the following continuing calibration verification standards (CCV's):

PEST LOW LEVEL 0416-1: Endrin Aldehyde, Methoxychlor, and Endrin Ketone.
PEST MID LEVEL 0416-1: Aldrin, Endrin, Endosulfan II, Endrin Aldehyde, Methoxychlor, Endosulfan Sulfate, and Endrin Ketone.
PEST HIGH LEVEL 0416-1: Endosulfan Sulfate, Endrin Ketone.
PEST LOW LEVEL 0416-2: d-BHC, Endrin Aldehyde, Endosulfan Sulfate, and Endrin Ketone
PESTCCV 0416-1: 4,4'-DDD and Endrin Ketone.
PESTCCV 0416-2: d-BHC, Endosulfan Sulfate, and Endrin Ketone
PESTCCV 0416-3: d-BHC, Endosulfan Sulfate, Endrin Aldehyde, and Endrin Ketone
PESTCCV 0416-4: d-BHC and 4,4'-DDD.

Since the degradation of the CCV standards was reproducible after re-injecting the sample extracts, the CCV degradation problem was attributed to the matrix of this sample.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

Case Narrative
Page 2 of 2

Organochlorine Pesticides by EPA 8081A Analysis (sample MW-1-10)

Due to sample matrix effects, the percent difference values for the following analytes were greater than the quality control limit of +15% (low bias) on both columns in the following continuing calibration verification standard (CCV):

PESTCCV 0418-2: DCB, 4,4'-DDT, and Methoxychlor.
PESTCCV 0418-3: 4,4'-DDT and Methoxychlor.
PESTCCV 0418-4: 4,4'-DDT.

The percent difference values for the following analytes were greater than the quality control limit of -15% (high bias) on both columns in the following continuing calibration verification standards (CCV's):

PESTCCV 0418-3: delta-BHC, 4,4'-DDD, Endosulfan Sulfate, and Endrin Ketone.
PESTCCV 0418-4: delta-BHC, 4,4'-DDD, Endosulfan Sulfate, and Endrin Ketone.

Since the degradation of the CCV standards was reproducible after re-injecting the sample extracts, the CCV degradation problem was attributed to the matrix of this sample.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

TOTAL METALS
EPA 6010B/7471A

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-20

Client ID: MW-1-10

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.54
Chromium	6010B	7.0	0.54
Lead	6010B	ND	5.4
Mercury	7471A	ND	0.27

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

SEA036901

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-23

Client ID: SED-7

Analyte	Method	Result	PQL
Arsenic	6010B	ND	14
Cadmium	6010B	ND	0.69
Chromium	6010B	7.0	0.69
Lead	6010B	9.2	6.9
Mercury	7471A	ND	0.35

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-24

Client ID: SED-8

Analyte	Method	Result	PQL
Arsenic	6010B	ND	18
Cadmium	6010B	ND	0.89
Chromium	6010B	18	0.89
Lead	6010B	57	8.9
Mercury	7471A	ND	0.45

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-25

Client ID: BH-1-2.5

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.57
Chromium	6010B	9.7	0.57
Lead	6010B	ND	5.7
Mercury	7471A	ND	0.28

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-29

Client ID: MW-2-7.5

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.56
Chromium	6010B	4.8	0.56
Lead	6010B	ND	5.6
Mercury	7471A	ND	0.28

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-32

Client ID: BH-3-2.5

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.56
Chromium	6010B	10	0.56
Lead	6010B	ND	5.6
Mercury	7471A	ND	0.28

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-13-06

Date Analyzed: 4-13-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-36

Client ID: MW3-7.5

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.54
Chromium	6010B	6.6	0.54
Lead	6010B	ND	5.4
Mercury	7471A	ND	0.27

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-13-06
Date Analyzed: 4-13-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0413S2&MB0413S4

Analyte	Method	Result	PQL
Arsenic	6010B	ND	10
Cadmium	6010B	ND	0.50
Chromium	6010B	ND	0.50
Lead	6010B	ND	5.0
Mercury	7471A	ND	0.25

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL**

Date Extracted: 4-13-06
Date Analyzed: 4-13-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-075-13

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	ND	ND	NA	10	
Cadmium	ND	ND	NA	0.50	
Chromium	8.90	8.08	10	0.50	
Lead	ND	ND	NA	5.0	
Mercury	ND	ND	NA	0.25	

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL**

Date Extracted: 4-13-06
Date Analyzed: 4-13-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-075-13

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	90.2	90	92.0	92	2	
Cadmium	50	46.3	93	46.2	92	0	
Chromium	100	98.5	90	99.1	90	1	
Lead	250	235	94	234	94	0	
Mercury	0.50	0.464	93	0.472	94	2	

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody,
and is intended only for the use of the individual or company to whom it is addressed.

SEA036910

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-23

Client ID: SED-7

	Result	PQL
Aroclor 1016:	ND	0.069
Aroclor 1221:	ND	0.069
Aroclor 1232:	ND	0.069
Aroclor 1242:	ND	0.069
Aroclor 1248:	ND	0.069
Aroclor 1254:	ND	0.069
Aroclor 1260:	ND	0.069

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	67	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-24

Client ID: SED-8

	Result	PQL
Aroclor 1016:	ND	0.089
Aroclor 1221:	ND	0.089
Aroclor 1232:	ND	0.089
Aroclor 1242:	ND	0.089
Aroclor 1248:	ND	0.089
Aroclor 1254:	ND	0.089
Aroclor 1260:	ND	0.089

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	79	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-25

Client ID: BH-1-2.5

	Result	PQL
Aroclor 1016:	ND	0.057
Aroclor 1221:	ND	0.057
Aroclor 1232:	ND	0.057
Aroclor 1242:	ND	0.057
Aroclor 1248:	ND	0.057
Aroclor 1254:	ND	0.057
Aroclor 1260:	ND	0.057

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	81	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-29

Client ID: MW-2-7.5

	Result	PQL
Aroclor 1016:	ND	0.056
Aroclor 1221:	ND	0.056
Aroclor 1232:	ND	0.056
Aroclor 1242:	ND	0.056
Aroclor 1248:	ND	0.056
Aroclor 1254:	ND	0.056
Aroclor 1260:	ND	0.056

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	88	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-32

Client ID: BH-3-2.5

	Result	PQL
Aroclor 1016:	ND	0.056
Aroclor 1221:	ND	0.056
Aroclor 1232:	ND	0.056
Aroclor 1242:	ND	0.056
Aroclor 1248:	ND	0.056
Aroclor 1254:	ND	0.056
Aroclor 1260:	ND	0.056

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	86	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-36

Client ID: MW3-7.5

	Result	PQL
Aroclor 1016:	ND	0.054
Aroclor 1221:	ND	0.054
Aroclor 1232:	ND	0.054
Aroclor 1242:	ND	0.054
Aroclor 1248:	ND	0.054
Aroclor 1254:	ND	0.054
Aroclor 1260:	ND	0.054

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	86	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-12-06
Date Analyzed: 4-13-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0412S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	96	41-128

Flags:

Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**PCBs by EPA 8082
 MS/MSD QUALITY CONTROL**

Date Extracted: 4-12-06

Date Analyzed: 4-14-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-13

Spike Level: 0.500

	MS	Percent Recovery	MSD	Percent Recovery	RPD
Aroclor 1260:	0.501	100	0.466	93	7
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	80	77	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-17-06

Date Analyzed: 4-19-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-075-20

Client ID: MW-1-10

	Result	PQL
Aroclor 1016:	ND	0.054
Aroclor 1221:	ND	0.054
Aroclor 1232:	ND	0.054
Aroclor 1242:	ND	0.054
Aroclor 1248:	ND	0.054
Aroclor 1254:	ND	0.054
Aroclor 1260:	ND	0.054

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	80	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: MB0417S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	81	41-128

Flags:

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**PCBs by EPA 8082
MS/MSD QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-094-08

Spike Level: 0.500

	MS	Percent Recovery	MSD	Percent Recovery	RPD
Aroclor 1260:	0.403	81	0.416	83	3
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	71	73	41-128

Flags:

Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06
 Date Analyzed: 4-17-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-23
 Client ID: SED-7

Analyte	Result	PQL	Flags
alpha-BHC	ND	6.9	
gamma-BHC	ND	6.9	
Heptachlor	ND	6.9	
Aldrin	ND	6.9	
beta-BHC	ND	6.9	
delta-BHC	ND	6.9	
Heptachlor epoxide	ND	6.9	
Endosulfan I	ND	6.9	
4,4'-DDE	ND	14	
Dieldrin	ND	14	
Endrin	ND	14	
Endosulfan II	ND	14	
4,4'-DDD	ND	14	
4,4'-DDT	ND	14	
Endrin Aldehyde	ND	14	
Endosulfan Sulfate	ND	14	
Methoxychlor	ND	14	
Endrin ketone	ND	14	
Toxaphene	ND	140	
Chlordane (Technical)	ND	69	

Surrogate	Percent Recovery	Control Limits
TCMX	62	34 - 109
DCB	55	30 - 115

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06
 Date Analyzed: 4-18-06
 Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-24
 Client ID: SED-8

Analyte	Result	PQL	Flags
alpha-BHC	ND	8.9	
gamma-BHC	ND	8.9	
Heptachlor	77	8.9	
Aldrin	ND	8.9	
beta-BHC	ND	8.9	
delta-BHC	ND	8.9	
Heptachlor epoxide	ND	8.9	
Endosulfan I	ND	8.9	
4,4'-DDE	ND	18	
Dieldrin	ND	18	
Endrin	ND	18	
Endosulfan II	ND	18	
4,4'-DDD	ND	18	
4,4'-DDT	ND	18	
Endrin Aldehyde	ND	18	
Endosulfan Sulfate	ND	18	
Methoxychlor	ND	18	
Endrin ketone	ND	18	
Toxaphene	ND	180	
Chlordane (Technical)	ND	89	

Surrogate	Percent Recovery	Control Limits
TCMX	66	34 - 109
DCB	51	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06
 Date Analyzed: 4-17-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-25
 Client ID: BH-1-2.5

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.7	
gamma-BHC	ND	5.7	
Heptachlor	ND	5.7	
Aldrin	ND	5.7	
beta-BHC	ND	5.7	
delta-BHC	ND	5.7	
Heptachlor epoxide	ND	5.7	
Endosulfan I	ND	5.7	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	57	

Surrogate	Percent Recovery	Control Limits
TCMX	62	34 - 109
DCB	61	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06
 Date Analyzed: 4-17-06
 Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-29
 Client ID: MW-2-7.5

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.6	
gamma-BHC	ND	5.6	
Heptachlor	ND	5.6	
Aldrin	ND	5.6	
beta-BHC	ND	5.6	
delta-BHC	ND	5.6	
Heptachlor epoxide	ND	5.6	
Endosulfan I	ND	5.6	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	56	

Surrogate	Percent Recovery	Control Limits
TCMX	67	34 - 109
DCB	66	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06
 Date Analyzed: 4-17-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-32
 Client ID: BH-3-2.5

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.6	
gamma-BHC	ND	5.6	
Heptachlor	ND	5.6	
Aldrin	ND	5.6	
beta-BHC	ND	5.6	
delta-BHC	ND	5.6	
Heptachlor epoxide	ND	5.6	
Endosulfan I	ND	5.6	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	56	

Surrogate	Percent Recovery	Control Limits
TCMX	71	34 - 109
DCB	74	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-12-06

Date Analyzed: 4-17-06

Matrix: Soil

Units: ug/kg (ppb)

Lab ID: 04-075-36

Client ID: MW3-7.5

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.4	
gamma-BHC	ND	5.4	
Heptachlor	ND	5.4	
Aldrin	ND	5.4	
beta-BHC	ND	5.4	
delta-BHC	ND	5.4	
Heptachlor epoxide	ND	5.4	
Endosulfan I	ND	5.4	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	54	

Surrogate	Percent Recovery	Control Limits
TCMX	76	34 - 109
DCB	77	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-12-06
 Date Analyzed: 4-17-06
 Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: MB0412S1

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.0	
gamma-BHC	ND	5.0	
Heptachlor	ND	5.0	
Aldrin	ND	5.0	
beta-BHC	ND	5.0	
delta-BHC	ND	5.0	
Heptachlor epoxide	ND	5.0	
Endosulfan I	ND	5.0	
4,4'-DDE	ND	10	
Dieldrin	ND	10	
Endrin	ND	10	
Endosulfan II	ND	10	
4,4'-DDD	ND	10	
4,4'-DDT	ND	10	
Endrin Aldehyde	ND	10	
Endosulfan Sulfate	ND	10	
Methoxychlor	ND	10	
Endrin ketone	ND	10	
Toxaphene	ND	100	
Chlordane (Technical)	ND	50	

Surrogate	Percent Recovery	Control Limits
TCMX	76	34 - 109
DCB	79	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 MS/MSD QUALITY CONTROL**

Date Extracted: 4-12-06

Date Analyzed: 4-17-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-13

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
gamma-BHC	50	37.0	74	35.6	71	4	
Heptachlor	50	34.6	69	33.1	66	4	
Aldrin	50	34.8	70	34.7	69	0	
Dieldrin	125	98.0	78	97.3	78	1	
Endrin	125	91.6	73	91.2	73	0	
4,4'-DDT	125	99.7	80	98.1	79	2	

Surrogate	Percent Recovery	Percent Recovery	Control Limits
TCMX	56	59	34 - 109
DCB	64	65	30 - 115

Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-075-20
 Client ID: MW-1-10

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.4	
gamma-BHC	ND	5.4	
Heptachlor	ND	5.4	
Aldrin	ND	5.4	
beta-BHC	ND	5.4	
delta-BHC	ND	5.4	
Heptachlor epoxide	ND	5.4	
Endosulfan I	ND	5.4	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	54	

Surrogate	Percent Recovery	Control Limits
TCMX	75	34 - 109
DCB	69	30 - 115

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: MB0417S1

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.0	
gamma-BHC	ND	5.0	
Heptachlor	ND	5.0	
Aldrin	ND	5.0	
beta-BHC	ND	5.0	
delta-BHC	ND	5.0	
Heptachlor epoxide	ND	5.0	
Endosulfan I	ND	5.0	
4,4'-DDE	ND	10	
Dieldrin	ND	10	
Endrin	ND	10	
Endosulfan II	ND	10	
4,4'-DDD	ND	10	
4,4'-DDT	ND	10	
Endrin Aldehyde	ND	10	
Endosulfan Sulfate	ND	10	
Methoxychlor	ND	10	
Endrin ketone	ND	10	
Toxaphene	ND	100	
Chlordane (Technical)	ND	50	

Surrogate	Percent Recovery	Control Limits
TCMX	79	34 - 109
DCB	73	30 - 115

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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Date of Report: April 19, 2006
 Samples Submitted: April 12, 2006
 Laboratory Reference: 0604-075
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 MS/MSD QUALITY CONTROL**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-094-08

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
gamma-BHC	50	33.4	67	32.1	64	4	
Heptachlor	50	36.6	73	35.2	70	4	
Aldrin	50	35.2	70	33.7	67	4	
Dieldrin	125	98.0	78	96.4	77	2	
Endrin	125	94.7	76	90.6	73	4	
4,4'-DDT	125	70.6	57	65.9	53	7	

Surrogate	Percent Recovery	Percent Recovery	Control Limits
TCMX	71	70	34 - 109
DCB	67	68	30 - 115

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-12-06
Date Analyzed: 4-12-06

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	MW4 7.5	MW5 5	MW-1-10
Lab ID:	04-075-09	04-075-13	04-075-20
Diesel Range:	ND	ND	ND
PQL:	34	33	27
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	68	67	54
Identification:	---	---	---
Surrogate Recovery o-Terphenyl:	109%	102%	103%
Flags:	Y	Y	Y

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-12-06
Date Analyzed: 4-12-06

Matrix: Soil
Units: mg/kg (ppm)

Client ID:	BH-1-2.5	MW-2-7.5	BH-3-2.5
Lab ID:	04-075-25	04-075-29	04-075-32
Diesel Range:	ND	ND	ND
PQL:	28	28	28
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	57	56	56
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	103%	111%	101%
Flags:	Y	Y	Y

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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SEA036934

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-12-06
Date Analyzed: 4-12-06

Matrix: Soil
Units: mg/kg (ppm)

Client ID: **MW-3-7.5**
Lab ID: 04-075-36

Diesel Range: **ND**
PQL: 27
Identification: —

Lube Oil Range: **ND**
PQL: 54
Identification: —

Surrogate Recovery
o-Terphenyl: 116%

Flags: Y

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

**NWTPH-Dx
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-12-06
Date Analyzed: 4-12-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0412S1

Diesel Range: ND
PQL: 25

Identification: —

Lube Oil Range: ND
PQL: 50

Identification: —

Surrogate Recovery
o-Terphenyl: 113%

Flags: Y

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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SEA036936

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-12-06
Date Analyzed: 4-12-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-075-32 04-075-32 DUP

Diesel Range: ND ND
PQL: 25 25

RPD: N/A

Surrogate Recovery
o-Terphenyl: 101% 109%

Flags: Y Y

Date of Report: April 19, 2006
Samples Submitted: April 12, 2006
Laboratory Reference: 0604-075
Project: 2006-034

% MOISTURE

Date Analyzed: 4-12-06

Client ID	Lab ID	% Moisture
SED 1	04-075-01	18
SED 2	04-075-02	41
SED 3	04-075-03	21
SED 4	04-075-04	24
SED 5	04-075-05	53
SED 6	04-075-06	25
MW4 7.5	04-075-09	27
MW5 5	04-075-13	25
MW-1-10	04-075-20	7
SED-7	04-075-23	28
SED-8	04-075-24	44
BH-1-2.5	04-075-25	12
MW-2-7.5	04-075-29	10
BH-3-2.5	04-075-32	11
MW-3-7.5	04-075-36	7



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- G - Insufficient sample quantity for duplicate analysis.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- O - Hydrocarbons indicative of diesel fuel are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a silica gel cleanup procedure.
- Y - Sample extract treated with an acid/silica gel cleanup procedure.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425)774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503)675-2424

Chain of Custody and Laboratory Analysis Request

04-075

DATE: 4/10-4/11/06

PAGE: 1 of 2

PROJECT NAME: DUVVAMISHI SS # 2006034

SITE CODE:

SAMPLERS NAME: P. PERMAN, A. SUMM, V. ATKINS PHONE: 425-774-0106

SAMPLERS SIGNATURE: *Na G*

HWA CONTACT: V. ATKINS PHONE:

ANALYSIS REQUESTED

[illegible]

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: <i>[Signature]</i>	<i>[Signature]</i>	HWA RESOURCES	4/11/06	1700	
Received by: <i>[Signature]</i>	<i>[Signature]</i>	CSE	4.12.06	9:00A	
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler

SEA036940



HWA GEOSCIENCES INC.

19730 64th Ave. W., Suite 200, Lynwood, WA 98036 (425)774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503)675-2424

Chain of Custody and Laboratory Analysis Request

04-075

DATE: 4-10/11/06

PAGE: 2 of 2

PROJECT NAME: Duwamish SS #: 2006-034
SITE CODE: _____
SAMPLERS NAME: V. Atkins PHONE: _____
SAMPLERS SIGNATURE: _____
HWA CONTACT: V. Atkins PHONE: 425-774-0106

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	MTCA METALS	PERCHLOROPOLYBIPHENYL	NUTRIENT-DX	NUTRIENT-G/BETA	PAHS	VOCs	DRY WT	REMARKS
MW-1-10	4/11/06	955	Soil	20	2	X	X	X				X	
MW-1-15		957	I	21									
MW-1-20		1000	I	22									
SEP-7		945	SEP	23		X	X					X	
SEP-8		1010	SEP	24		X	X					X	
BH-1-25		1055	Soil	25		X	X	X				X	
BH-1-5		1100		26									
MW-2-2.5		1128		27									
MW-2-5		1138		28									
MW-2-7.5		1134		29		X	X	X				X	
MW-2-10		1140		30	2								
MW-2-15		1142		31	1								
BH-3-2.5		1239		32	2	X	X	X				X	
BH-3-5		1248		33									
MW-3-2.5		1335		34									
MW-3-5		1337		35									
MW-3-7.5		1340		36		X	X	X				X	
MW-3-10		1343		37									
MW-3-15		1348		38	1								

Added 4/17/06. DB
(2 days AT)

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: <u>Gregory V. Atkins</u>		HWA	4/11/06	1700	
Received by: <u>JOHN CALSON</u>		OSE, LLC	4.12.06	9:00A	
Relinquished by:					
Received by:					



**OnSite
Environmental Inc.**

Analytical Testing and Mobile Laboratory Services

April 21, 2006

Arnie Sugar
HWA GeoSciences, Inc.
19730 64th Avenue West, Suite 200
Lynnwood, WA 98036

Re: Analytical Data for Project 2006-034
Laboratory Reference No. 0604-094

Dear Arnie:

Enclosed are the analytical results and associated quality control data for samples submitted on April 14, 2006.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



David Baumeister
Project Manager

Enclosures

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

Case Narrative

Samples were collected on April 12 and 13, 2006 and received by the laboratory on April 14, 2006. They were maintained at the laboratory at a temperature of 2°C to 6°C except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Dissolved Metals EPA 200.8/7470A Analysis

Due to an interference, the PQL for Arsenic was raised.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Organochlorine Pesticides by EPA 8081A (water) Analysis

Due to insufficient sample, a SB/SBD was extracted instead of a MS/MSD pair. The relative percent difference values (RPD) for the spike analytes Heptachlor, Aldrin, and 4,4'-DDT were greater than the control limits in the SB/SBD pair. Since the hold time has expired and all other QC was within quality control limits, no further action was performed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Gx

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Client ID: **MW-1**
Lab ID: 04-094-03

MW-2
04-094-04

	Result	Flags	PQL	Result	Flags	PQL
TPH-Gas	ND		100	ND		100

Surrogate Recovery:						
Fluorobenzene	84%			84%		

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Gx

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Client ID: **MW-3**
Lab ID: 04-094-05

MW-DUP
04-094-06

	Result	Flags	PQL	Result	Flags	PQL
TPH-Gas	ND		100	ND		100
Surrogate Recovery: Fluorobenzene	84%			84%		

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Gx
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0417W1

	Result	Flags	PQL
TPH-Gas	ND		100
Surrogate Recovery: Fluorobenzene	85%		

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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and is intended only for the use of the individual or company to whom it is addressed.

SEA036946

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Gx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Lab ID:	04-103-02 Original	04-103-02 Duplicate	RPD	Flags
TPH-Gas	ND	ND	NA	
Surrogate Recovery: Fluorobenzene	102%	103%		

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
 Page 1 of 2

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-03
 Client ID: MW-1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
 Page 2 of 2

Lab ID: 04-094-03
 Client ID: MW-1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	98	70-123
Toluene, d8	98	70-119
4-Bromofluorobenzene	97	70-119

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-04
 Client ID: MW-2

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	0.47		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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This report pertains to the samples analyzed in accordance with the chain of custody,
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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
 Page 2 of 2

Lab ID: 04-094-04
 Client ID: MW-2

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	97	70-123
Toluene, d8	99	70-119
4-Bromofluorobenzene	96	70-119

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-05
 Client ID: MW-3

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
 Page 2 of 2

Lab ID: 04-094-05
 Client ID: MW-3

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	95	70-123
Toluene, d8	98	70-119
4-Bromofluorobenzene	96	70-119

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B

Page 1 of 2

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-10
 Client ID: TRIP BLANK

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

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SEA036954

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
 Page 2 of 2

Lab ID: 04-094-10
 Client ID: TRIP BLANK

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	103	70-123
Toluene, d8	98	70-119
4-Bromofluorobenzene	99	70-119

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SEA036955

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL

Page 1 of 2

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: MB0414W1

Compound	Results	Flags	PQL
Dichlorodifluoromethane	ND		0.20
Chloromethane	ND		0.20
Vinyl Chloride	ND		0.20
Bromomethane	ND		0.20
Chloroethane	ND		0.20
Trichlorofluoromethane	ND		0.20
1,1-Dichloroethene	ND		0.20
Acetone	ND		5.0
Iodomethane	ND		1.0
Carbon Disulfide	ND		0.20
Methylene Chloride	ND		1.0
(trans) 1,2-Dichloroethene	ND		0.20
Methyl t-Butyl Ether	ND		0.20
1,1-Dichloroethane	ND		0.20
Vinyl Acetate	ND		1.0
2,2-Dichloropropane	ND		0.20
(cis) 1,2-Dichloroethene	ND		0.20
2-Butanone	ND		5.0
Bromochloromethane	ND		0.20
Chloroform	ND		0.20
1,1,1-Trichloroethane	ND		0.20
Carbon Tetrachloride	ND		0.20
1,1-Dichloropropene	ND		0.20
Benzene	ND		0.20
1,2-Dichloroethane	ND		0.20
Trichloroethene	ND		0.20
1,2-Dichloropropane	ND		0.20
Dibromomethane	ND		0.20
Bromodichloromethane	ND		0.20
2-Chloroethyl Vinyl Ether	ND		1.0
(cis) 1,3-Dichloropropene	ND		0.20
Methyl Isobutyl Ketone	ND		2.0
Toluene	ND		0.20
(trans) 1,3-Dichloropropene	ND		0.20

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SEA036956

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
 Page 2 of 2

Lab ID: MB0414W1

Compound	Results	Flags	PQL
1,1,2-Trichloroethane	ND		0.20
Tetrachloroethene	ND		0.20
1,3-Dichloropropane	ND		0.20
2-Hexanone	ND		2.0
Dibromochloromethane	ND		0.20
1,2-Dibromoethane	ND		0.20
Chlorobenzene	ND		0.20
1,1,1,2-Tetrachloroethane	ND		0.20
Ethylbenzene	ND		0.20
m,p-Xylene	ND		0.40
o-Xylene	ND		0.20
Styrene	ND		0.20
Bromoform	ND		1.0
Isopropylbenzene	ND		0.20
Bromobenzene	ND		0.20
1,1,2,2-Tetrachloroethane	ND		0.20
1,2,3-Trichloropropane	ND		0.20
n-Propylbenzene	ND		0.20
2-Chlorotoluene	ND		0.20
4-Chlorotoluene	ND		0.20
1,3,5-Trimethylbenzene	ND		0.20
tert-Butylbenzene	ND		0.20
1,2,4-Trimethylbenzene	ND		0.20
sec-Butylbenzene	ND		0.20
1,3-Dichlorobenzene	ND		0.20
p-Isopropyltoluene	ND		0.20
1,4-Dichlorobenzene	ND		0.20
1,2-Dichlorobenzene	ND		0.20
n-Butylbenzene	ND		0.20
1,2-Dibromo-3-chloropropane	ND		1.0
1,2,4-Trichlorobenzene	ND		0.20
Hexachlorobutadiene	ND		0.20
Naphthalene	ND		1.0
1,2,3-Trichlorobenzene	ND		0.20

Surrogate	Percent Recovery	Control Limits
Dibromofluoromethane	96	70-123
Toluene, d8	97	70-119
4-Bromofluorobenzene	99	70-119

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**VOLATILES by EPA 8260B
 SB/SBD QUALITY CONTROL**

Date Extracted: 4-14-06
 Date Analyzed: 4-14-06
 Matrix: Water
 Units: ug/L (ppb)

Lab ID: SB0414W1

Compound	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
1,1-Dichloroethene	10.0	12.5	125	12.1	121	70-130	
Benzene	10.0	11.6	116	11.7	117	70-130	
Trichloroethene	10.0	11.1	111	10.8	108	70-130	
Toluene	10.0	10.8	108	10.5	105	70-130	
Chlorobenzene	10.0	9.91	99	9.71	97	70-130	

	RPD	RPD Limit	Flags
1,1-Dichloroethene	3	17	
Benzene	1	13	
Trichloroethene	3	12	
Toluene	3	14	
Chlorobenzene	2	9	

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 04-094-03
 Client ID: MW-1

Analyte	Result	PQL	Flags
alpha-BHC	ND	0.0049	
gamma-BHC	ND	0.0049	
Heptachlor	ND	0.0049	
Aldrin	ND	0.0049	
beta-BHC	ND	0.0049	
delta-BHC	ND	0.0049	
Heptachlor epoxide	ND	0.0049	
Endosulfan I	ND	0.0049	
4,4'-DDE	ND	0.0049	
Dieldrin	ND	0.0049	
Endrin	ND	0.0049	
Endosulfan II	ND	0.0049	
4,4'-DDD	ND	0.0049	
4,4'-DDT	ND	0.0049	
Endrin Aldehyde	ND	0.0049	
Endosulfan Sulfate	ND	0.0049	
Methoxychlor	ND	0.0049	
Endrin ketone	ND	0.0049	
Toxaphene	ND	0.049	
Chlordane (Technical)	ND	0.049	

Surrogate	Percent Recovery	Control Limits
TCMX	70	31 - 111
DCB	83	30 - 114

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 04-094-04
 Client ID: MW-2

Analyte	Result	PQL	Flags
alpha-BHC	ND	0.0048	
gamma-BHC	ND	0.0048	
Heptachlor	ND	0.0048	
Aldrin	ND	0.0048	
beta-BHC	ND	0.0048	
delta-BHC	ND	0.0048	
Heptachlor epoxide	ND	0.0048	
Endosulfan I	ND	0.0048	
4,4'-DDE	ND	0.0048	
Dieldrin	ND	0.0048	
Endrin	ND	0.0048	
Endosulfan II	ND	0.0048	
4,4'-DDD	ND	0.0048	
4,4'-DDT	ND	0.0048	
Endrin Aldehyde	ND	0.0048	
Endosulfan Sulfate	ND	0.0048	
Methoxychlor	ND	0.0048	
Endrin ketone	ND	0.0048	
Toxaphene	ND	0.048	
Chlordane (Technical)	ND	0.048	

Surrogate	Percent Recovery	Control Limits
TCMX	73	31 - 111
DCB	76	30 - 114

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Water
 Units: ug/L (ppb)

Lab ID: 04-094-05
 Client ID: MW-3

Analyte	Result	PQL	Flags
alpha-BHC	ND	0.0048	
gamma-BHC	ND	0.0048	
Heptachlor	ND	0.0048	
Aldrin	ND	0.0048	
beta-BHC	ND	0.0048	
delta-BHC	ND	0.0048	
Heptachlor epoxide	ND	0.0048	
Endosulfan I	ND	0.0048	
4,4'-DDE	ND	0.0048	
Dieldrin	ND	0.0048	
Endrin	ND	0.0048	
Endosulfan II	ND	0.0048	
4,4'-DDD	ND	0.0048	
4,4'-DDT	ND	0.0048	
Endrin Aldehyde	ND	0.0048	
Endosulfan Sulfate	ND	0.0048	
Methoxychlor	ND	0.0048	
Endrin ketone	ND	0.0048	
Toxaphene	ND	0.048	
Chlordane (Technical)	ND	0.048	

Surrogate	Percent Recovery	Control Limits
TCMX	72	31 - 111
DCB	78	30 - 114

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06

Matrix: Water
 Units: ug/L (ppb)

Lab ID: MB0417W1

Analyte	Result	PQL	Flags
alpha-BHC	ND	0.0050	
gamma-BHC	ND	0.0050	
Heptachlor	ND	0.0050	
Aldrin	ND	0.0050	
beta-BHC	ND	0.0050	
delta-BHC	ND	0.0050	
Heptachlor epoxide	ND	0.0050	
Endosulfan I	ND	0.0050	
4,4'-DDE	ND	0.0050	
Dieldrin	ND	0.0050	
Endrin	ND	0.0050	
Endosulfan II	ND	0.0050	
4,4'-DDD	ND	0.0050	
4,4'-DDT	ND	0.0050	
Endrin Aldehyde	ND	0.0050	
Endosulfan Sulfate	ND	0.0050	
Methoxychlor	ND	0.0050	
Endrin ketone	ND	0.0050	
Toxaphene	ND	0.050	
Chlordane (Technical)	ND	0.050	

Surrogate	Percent Recovery	Control Limits
TCMX	58	31 - 111
DCB	72	30 - 114

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 SB/SBD QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-19-06

Matrix: Water
 Units: ug/L (ppb)

Lab ID: SB0417W1

Analyte	Spike Level	SB	Percent Recovery	SBD	Percent Recovery	RPD	Flags
gamma-BHC	0.050	0.0376	75	0.0453	91	19	
Heptachlor	0.050	0.0350	70	0.0434	87	21	L
Aldrin	0.050	0.0337	67	0.0421	84	22	L
Dieldrin	0.125	0.105	84	0.124	99	17	
Endrin	0.125	0.104	83	0.127	102	20	
4,4'-DDT	0.125	0.0910	73	0.115	92	23	L

Surrogate	Percent Recovery	Percent Recovery	Control Limits
TCMX	69	87	31 - 111
DCB	78	91	30 - 114

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-094-03
Client ID: MW-1

	Result	PQL
Aroclor 1016:	ND	0.049
Aroclor 1221:	ND	0.049
Aroclor 1232:	ND	0.049
Aroclor 1242:	ND	0.049
Aroclor 1248:	ND	0.049
Aroclor 1254:	ND	0.049
Aroclor 1260:	ND	0.049

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	92	30-138

Flags:

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: 04-094-04

Client ID: MW-2

	Result	PQL
Aroclor 1016:	ND	0.048
Aroclor 1221:	ND	0.048
Aroclor 1232:	ND	0.048
Aroclor 1242:	ND	0.048
Aroclor 1248:	ND	0.048
Aroclor 1254:	ND	0.048
Aroclor 1260:	ND	0.048

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	88	30-138

Flags:

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: 04-094-05

Client ID: MW-3

	Result	PQL
Aroclor 1016:	ND	0.048
Aroclor 1221:	ND	0.048
Aroclor 1232:	ND	0.048
Aroclor 1242:	ND	0.048
Aroclor 1248:	ND	0.048
Aroclor 1254:	ND	0.048
Aroclor 1260:	ND	0.048

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	88	30-138

Flags:

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0417W1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	90	30-138

Flags:

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**PCBs by EPA 8082
 SB/SBD QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: SB0417W1

Spike Level: 0.500

	SB	Percent Recovery	SBD	Percent Recovery	RPD
Aroclor 1260:	0.453	91	0.532	106	16
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	84	100	30-138

Flags:

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

PAHs by EPA 8270C/SIM

Date Extracted: 4-15-06
 Date Analyzed: 4-21-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-03
 Client ID: MW-1

Compound:	Results	Flags	PQL
Naphthalene	ND		0.095
2-Methylnaphthalene	ND		0.095
1-Methylnaphthalene	ND		0.095
Acenaphthylene	ND		0.095
Acenaphthene	ND		0.095
Fluorene	ND		0.095
Phenanthrene	ND		0.095
Anthracene	ND		0.095
Fluoranthene	ND		0.095
Pyrene	ND		0.095
Benzo[a]anthracene	ND		0.0095
Chrysene	ND		0.0095
Benzo[b]fluoranthene	ND		0.0095
Benzo[k]fluoranthene	ND		0.0095
Benzo[a]pyrene	ND		0.0095
Indeno[1,2,3-c,d]pyrene	ND		0.0095
Dibenz[a,h]anthracene	ND		0.0095
Benzo[g,h,i]perylene	ND		0.0095

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	66	24 - 92
2-Fluorobiphenyl	61	25 - 89
Terphenyl-d14	91	39 - 92

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

PAHs by EPA 8270C/SIM

Date Extracted: 4-15-06
 Date Analyzed: 4-21-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-04
 Client ID: MW-2

Compound:	Results	Flags	PQL
Naphthalene	ND		0.096
2-Methylnaphthalene	ND		0.096
1-Methylnaphthalene	ND		0.096
Acenaphthylene	ND		0.096
Acenaphthene	ND		0.096
Fluorene	ND		0.096
Phenanthrene	ND		0.096
Anthracene	ND		0.096
Fluoranthene	ND		0.096
Pyrene	ND		0.096
Benzo[a]anthracene	ND		0.0096
Chrysene	ND		0.0096
Benzo[b]fluoranthene	ND		0.0096
Benzo[k]fluoranthene	ND		0.0096
Benzo[a]pyrene	ND		0.0096
Indeno[1,2,3-c,d]pyrene	ND		0.0096
Dibenz[a,h]anthracene	ND		0.0096
Benzo[g,h,i]perylene	ND		0.0096

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	69	24 - 92
2-Fluorobiphenyl	65	25 - 89
Terphenyl-d14	92	39 - 92

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

PAHs by EPA 8270C/SIM

Date Extracted: 4-15-06
 Date Analyzed: 4-21-06
 Matrix: Water
 Units: ug/L (ppb)
 Lab ID: 04-094-05
 Client ID: MW-3

Compound:	Results	Flags	PQL
Naphthalene	ND		0.096
2-Methylnaphthalene	ND		0.096
1-Methylnaphthalene	ND		0.096
Acenaphthylene	ND		0.096
Acenaphthene	ND		0.096
Fluorene	ND		0.096
Phenanthrene	ND		0.096
Anthracene	ND		0.096
Fluoranthene	ND		0.096
Pyrene	ND		0.096
Benzo[a]anthracene	ND		0.0096
Chrysene	ND		0.0096
Benzo[b]fluoranthene	ND		0.0096
Benzo[k]fluoranthene	ND		0.0096
Benzo[a]pyrene	ND		0.0096
Indeno[1,2,3-c,d]pyrene	ND		0.0096
Dibenz[a,h]anthracene	ND		0.0096
Benzo[g,h,i]perylene	ND		0.0096

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	69	24 - 92
2-Fluorobiphenyl	64	25 - 89
Terphenyl-d14	92	39 - 92

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**PAHs by EPA 8270C/SIM
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-15-06
 Date Analyzed: 4-21-06

 Matrix: Water
 Units: ug/L (ppb)

 Lab ID: MB0415W1

Compound:	Results	Flags	PQL
Naphthalene	ND		0.10
2-Methylnaphthalene	ND		0.10
1-Methylnaphthalene	ND		0.10
Acenaphthylene	ND		0.10
Acenaphthene	ND		0.10
Fluorene	ND		0.10
Phenanthrene	ND		0.10
Anthracene	ND		0.10
Fluoranthene	ND		0.10
Pyrene	ND		0.10
Benzo[a]anthracene	ND		0.010
Chrysene	ND		0.010
Benzo[b]fluoranthene	ND		0.010
Benzo[k]fluoranthene	ND		0.010
Benzo[a]pyrene	ND		0.010
Indeno[1,2,3-c,d]pyrene	ND		0.010
Dibenz[a,h]anthracene	ND		0.010
Benzo[g,h,i]perylene	ND		0.010

Surrogate :	Percent Recovery	Control Limits
Nitrobenzene-d5	65	24 - 92
2-Fluorobiphenyl	59	25 - 89
Terphenyl-d14	91	39 - 92

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Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**PAHs by EPA 8270C/SIM
 SB/SBD QUALITY CONTROL**

Date Extracted: 4-15-06

Date Analyzed: 4-21-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: SB0415W1

Compound:	Spike Amount	SB	Percent Recovery	SBD	Percent Recovery	Recovery Limits	Flags
Naphthalene	0.500	0.367	73	0.332	66	43-76	
Acenaphthylene	0.500	0.404	81	0.346	69	41-88	
Acenaphthene	0.500	0.401	80	0.397	79	45-80	
Fluorene	0.500	0.428	86	0.406	81	49-92	
Phenanthrene	0.500	0.445	89	0.435	87	53-90	
Anthracene	0.500	0.437	87	0.429	86	55-94	
Fluoranthene	0.500	0.482	96	0.490	98	56-102	
Pyrene	0.500	0.472	94	0.481	96	53-99	
Benzo[a]anthracene	0.500	0.491	98	0.509	102	48-104	
Chrysene	0.500	0.462	92	0.460	92	43-94	
Benzo[b]fluoranthene	0.500	0.494	99	0.491	98	52-102	
Benzo[k]fluoranthene	0.500	0.492	98	0.493	99	53-100	
Benzo[a]pyrene	0.500	0.484	97	0.495	99	43-111	
Indeno(1,2,3-c,d)pyrene	0.500	0.476	95	0.504	101	50-105	
Dibenz[a,h]anthracene	0.500	0.453	91	0.474	95	49-96	
Benzo[g,h,i]perylene	0.500	0.482	96	0.480	96	50-103	

	RPD	RPD Limit	Flags
Naphthalene	10	25	
Acenaphthylene	15	25	
Acenaphthene	1	25	
Fluorene	5	25	
Phenanthrene	2	25	
Anthracene	2	25	
Fluoranthene	1	25	
Pyrene	2	25	
Benzo[a]anthracene	4	25	
Chrysene	1	25	
Benzo[b]fluoranthene	1	25	
Benzo[k]fluoranthene	0	25	
Benzo[a]pyrene	2	25	
Indeno(1,2,3-c,d)pyrene	6	25	
Dibenz[a,h]anthracene	5	25	
Benzo[g,h,i]perylene	1	25	

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Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: mg/L (ppm)

Client ID:	MW-5	MW-4	MW-1
Lab ID:	04-094-01	04-094-02	04-094-03
Diesel Range:	ND	ND	ND
PQL:	0.25	0.25	0.25
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	0.40	0.40	0.40
Identification:	---	---	---
Surrogate Recovery			
o-Terphenyl:	106%	95%	97%
Flags:	Y	Y	Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: mg/L (ppm)

Client ID:	MW-2	MW-3	MW-DUP
Lab ID:	04-094-04	04-094-05	04-094-06
Diesel Range:	ND	ND	ND
PQL:	0.25	0.26	0.25
Identification:	---	---	---
Lube Oil Range:	ND	ND	ND
PQL:	0.41	0.41	0.40
Identification:	---	---	---
Surrogate Recovery o-Terphenyl:	92%	92%	91%
Flags:	Y	Y	Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**NWTPH-Dx
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: mg/L (ppm)

Lab ID: MB0417W1

Diesel Range: ND
PQL: 0.25

Identification: —

Lube Oil Range: ND
PQL: 0.40

Identification: —

Surrogate Recovery
o-Terphenyl: 93%

Flags: Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Water
Units: mg/L (ppm)

Lab ID: 04-103-01 04-103-01 DUP

Diesel Range: ND ND
PQL: 0.25 0.25

RPD: N/A

Surrogate Recovery
o-Terphenyl: 114% 98%

Flags: Y Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 4-17&18-06

Date Analyzed: 4-17&18-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: 04-094-03

Client ID: MW-1

Analyte	Method	Result	PQL
Arsenic	200.8	ND	4.4
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Lead	200.8	ND	1.1
Mercury	7470A	ND	0.50

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Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 4-17&18-06
Date Analyzed: 4-17&18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-094-04
Client ID: MW-2

Analyte	Method	Result	PQL
Arsenic	200.8	ND	4.4
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Lead	200.8	ND	1.1
Mercury	7470A	ND	0.50

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

TOTAL METALS
EPA 200.8/7470A

Date Extracted: 4-17&18-06

Date Analyzed: 4-17&18-06

Matrix: Water

Units: ug/L (ppb)

Lab ID: 04-094-05

Client ID: MW-3

Analyte	Method	Result	PQL
Arsenic	200.8	ND	4.4
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Lead	200.8	ND	1.1
Mercury	7470A	ND	0.50

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17&18-06
Date Analyzed: 4-17&18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0417W2&MB0418W1

Analyte	Method	Result	PQL
Arsenic	200.8	ND	4.4
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Lead	200.8	ND	1.1
Mercury	7470A	ND	0.50

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-18-06
Date Analyzed: 4-18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0418W2

Analyte	Method	Result	PQL
Arsenic	200.8	ND	4.4
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Lead	200.8	ND	1.1

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SEA036982

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-17&18-06
Date Analyzed: 4-17&18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-103-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	4.90	5.22	6	4.4	
Cadmium	ND	ND	NA	4.4	
Chromium	ND	ND	NA	11	
Lead	ND	ND	NA	1.1	
Mercury	ND	ND	NA	0.50	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL**

Date Extracted: 4-18-06
Date Analyzed: 4-18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-094-06

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	ND	ND	NA	4.4	
Cadmium	ND	ND	NA	4.4	
Chromium	ND	ND	NA	11	
Lead	ND	ND	NA	1.1	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL**

Date Extracted: 4-17&18-06
Date Analyzed: 4-17&18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-103-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	125	109	117	102	6	
Cadmium	110	119	108	112	102	6	
Chromium	110	117	106	108	99	7	
Lead	110	120	109	111	101	8	
Mercury	12.5	11.7	94	11.7	94	0	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL**

Date Extracted: 4-18-06
Date Analyzed: 4-18-06

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-094-06

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	110	117	107	111	101	6	
Cadmium	110	115	105	108	98	6	
Chromium	110	106	97	105	96	1	
Lead	110	111	101	104	95	6	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Dx

Date Extracted: 4-14-06
Date Analyzed: 4-14-06

Matrix: Soil
Units: mg/kg (ppm)

Client ID: BH-2-2.5
Lab ID: 04-094-08

Diesel Range: ND
PQL: 27
Identification: —

Lube Oil Range: ND
PQL: 54
Identification: —

Surrogate Recovery
o-Terphenyl: 83%

Flags: Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**NWTPH-Dx
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-14-06
Date Analyzed: 4-14-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0414S1

Diesel Range: ND
PQL: 25

Identification: ---

Lube Oil Range: ND
PQL: 50

Identification: ---

Surrogate Recovery
o-Terphenyl: 108%

Flags: Y

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SEA036988

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

NWTPH-Dx
DUPLICATE QUALITY CONTROL

Date Extracted: 4-14-06
Date Analyzed: 4-14&18-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-087-06 04-087-06 DUP

Diesel Range: ND ND
PQL: 25 25

RPD: N/A

Surrogate Recovery
o-Terphenyl: 85% 128%

Flags: Y Y

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

PCBs by EPA 8082

Date Extracted: 4-17-06
Date Analyzed: 4-17-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-094-08
Client ID: BH-2-2.5

	Result	PQL
Aroclor 1016:	ND	0.054
Aroclor 1221:	ND	0.054
Aroclor 1232:	ND	0.054
Aroclor 1242:	ND	0.054
Aroclor 1248:	ND	0.054
Aroclor 1254:	ND	0.054
Aroclor 1260:	ND	0.054

Surrogate	Percent Recovery	Control Limits
Decachlorobiphenyl	79	41-128

Flags:

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**PCBs by EPA 8082
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: MB0417S1

	Result	PQL
Aroclor 1016:	ND	0.050
Aroclor 1221:	ND	0.050
Aroclor 1232:	ND	0.050
Aroclor 1242:	ND	0.050
Aroclor 1248:	ND	0.050
Aroclor 1254:	ND	0.050
Aroclor 1260:	ND	0.050

	Percent Recovery	Control Limits
Surrogate Decachlorobiphenyl	81	41-128

Flags:

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**PCBs by EPA 8082
 MS/MSD QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-17-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-094-08

Spike Level: 0.500

	MS	Percent Recovery	MSD	Percent Recovery	RPD
Aroclor 1260:	0.403	81	0.416	83	3
PQL	0.050		0.050		

Surrogate	Percent Recovery	Percent Recovery	Control Limits
Decachlorobiphenyl	71	73	41-128

Flags:

Date of Report: April 21, 2006
 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A**

Date Extracted: 4-17-06
 Date Analyzed: 4-19-06
 Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-094-08
 Client ID: BH-2-2.5

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.4	
gamma-BHC	ND	5.4	
Heptachlor	ND	5.4	
Aldrin	ND	5.4	
beta-BHC	ND	5.4	
delta-BHC	ND	5.4	
Heptachlor epoxide	ND	5.4	
Endosulfan I	ND	5.4	
4,4'-DDE	ND	11	
Dieldrin	ND	11	
Endrin	ND	11	
Endosulfan II	ND	11	
4,4'-DDD	ND	11	
4,4'-DDT	ND	11	
Endrin Aldehyde	ND	11	
Endosulfan Sulfate	ND	11	
Methoxychlor	ND	11	
Endrin ketone	ND	11	
Toxaphene	ND	110	
Chlordane (Technical)	ND	54	

Surrogate	Percent Recovery	Control Limits
TCMX	71	34 - 109
DCB	67	30 - 115

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 Samples Submitted: April 14, 2006
 Laboratory Reference: 0604-094
 Project: 2006-034

**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-19-06

Matrix: Soil

Units: ug/kg (ppb)

Lab ID: MB0417S1

Analyte	Result	PQL	Flags
alpha-BHC	ND	5.0	
gamma-BHC	ND	5.0	
Heptachlor	ND	5.0	
Aldrin	ND	5.0	
beta-BHC	ND	5.0	
delta-BHC	ND	5.0	
Heptachlor epoxide	ND	5.0	
Endosulfan I	ND	5.0	
4,4'-DDE	ND	10	
Dieldrin	ND	10	
Endrin	ND	10	
Endosulfan II	ND	10	
4,4'-DDD	ND	10	
4,4'-DDT	ND	10	
Endrin Aldehyde	ND	10	
Endosulfan Sulfate	ND	10	
Methoxychlor	ND	10	
Endrin ketone	ND	10	
Toxaphene	ND	100	
Chlordane (Technical)	ND	50	

Surrogate	Percent Recovery	Control Limits
TCMX	79	34 - 109
DCB	73	30 - 115

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**ORGANOCHLORINE
 PESTICIDES by EPA 8081A
 MS/MSD QUALITY CONTROL**

Date Extracted: 4-17-06

Date Analyzed: 4-19-06

Matrix: Soil
 Units: ug/kg (ppb)

Lab ID: 04-094-08

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
gamma-BHC	50	33.4	67	32.1	64	4	
Heptachlor	50	36.6	73	35.2	70	4	
Aldrin	50	35.2	70	33.7	67	4	
Dieldrin	125	98.0	78	96.4	77	2	
Endrin	125	94.7	76	90.6	73	4	
4,4'-DDT	125	70.6	57	65.9	53	7	

Surrogate	Percent Recovery	Percent Recovery	Control Limits
TCMX	71	70	34 - 109
DCB	67	68	30 - 115

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Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A**

Date Extracted: 4-14&17-06

Date Analyzed: 4-14&17-06

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 04-094-08

Client ID: BH-2-2.5

Analyte	Method	Result	PQL
Arsenic	6010B	ND	11
Cadmium	6010B	ND	0.54
Chromium	6010B	7.6	0.54
Lead	6010B	ND	5.4
Mercury	7471A	ND	0.27

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Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL**

Date Extracted: 4-14&17-06
Date Analyzed: 4-14&17-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0414S2&MB0417S1

Analyte	Method	Result	PQL
Arsenic	6010B	ND	10
Cadmium	6010B	ND	0.50
Chromium	6010B	ND	0.50
Lead	6010B	ND	5.0
Mercury	7471A	ND	0.25

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL**

Date Extracted: 4-14&17-06
Date Analyzed: 4-14&17-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-070-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	ND	ND	NA	10	
Cadmium	ND	ND	NA	0.50	
Chromium	18.1	17.3	4	0.50	
Lead	13.2	8.24	46	5.0	C
Mercury	ND	ND	NA	0.25	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

**TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL**

Date Extracted: 4-14&17-06
Date Analyzed: 4-14&17-06

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-070-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	92.2	92	89.3	89	3	
Cadmium	50	44.8	90	44.6	89	1	
Chromium	100	108	89	109	91	1	
Lead	250	227	86	228	86	0	
Mercury	0.50	0.482	96	0.486	97	1	

Date of Report: April 21, 2006
Samples Submitted: April 14, 2006
Laboratory Reference: 0604-094
Project: 2006-034

% MOISTURE

Date Analyzed: 4-14-06

Client ID	Lab ID	% Moisture
BH-2-2.5	04-094-08	7



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- G - Insufficient sample quantity for duplicate analysis.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- O - Hydrocarbons indicative of diesel fuel are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a silica gel cleanup procedure.
- Y - Sample extract treated with an acid/silica gel cleanup procedure.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



HWA GEOSCIENCES INC.

19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503) 675-2424

Chain of Custody and Laboratory Analysis Request

04-094

DATE: 4/12/06 11:13:16

PAGE: 1 of 1

PROJECT NAME: DUNAMISH - 9FF #: 2006-074
SITE CODE: NEORUE TOWN AND DUNAMISH FOR 9FF
SAMPLERS NAME: JEFF SPECIL PHONE: 425.774.0106
SAMPLERS SIGNATURE: [Signature]
HWA CONTACT: ARNIE SUHAR PHONE: 425.774.0106

ANALYSIS REQUESTED

HWA SAMPLE ID	DATE	TIME	MATRIX	LAB ID	# OF BOTTLE	NWTPH-GV (BTEX)	VOC	PEST/PCB	PAH	NWTPH-DX	TOTAL METALS (MCA)	DISSOLVED METALS (HOLD)	GW ↑ SOIL ↓	NWTPH-DX	PCBT (80PZ)	PESTICIDES (8081A)	TOTAL METALS (MCA)	% Moisture	HOLD	REMARKS
MW-5	4/12/06	1530	GW	1	9	X	X	X	X	X	X	X								* ARCHIVE DISSOLVED METAL SAMPLES
MW-4	4/12/06	1630	GW	2	9	X	X	X	X	X	X	X								
MW-1	4/13/06	1130	GW	3	9	X	X	X	X	X	X	X								
MW-2	4/13/06	1215	GW	4	9	X	X	X	X	X	X	X								* ALL DISSOLVED METALS SAMPLES
MW-3	4/13/06	1335	GW	5	9	X	X	X	X	X	X	X								FIELD FILTERED
MW-DHP	4/13/06	1345	GW	6	9	X	X	X	X	X	X	X								0.45μ FILTER
MW-FB	4/13/06	1420	GW	7	9	X	X	X	X	X	X	X		X	X	X	X	X	X	* ARCHIVE MW-FB
BH-2-2.5	4/12/06	1645	S	8	2									X	X	X	X			* ARCHIVE BH-2-6.5
BH-2-6.5	4/12/06	1055	S	9	2															
TRIP BLANK			W	10	2	X														

2 DAY TAT

PRINT NAME	SIGNATURE	COMPANY	DATE	TIME	REMARKS
Relinquished by: <u>JEFF SPECIL</u>	<u>[Signature]</u>	<u>HWA GED</u>	<u>4/11/06</u>	<u>1650</u>	
Received by: <u>[Signature]</u>	<u>David Rammeter</u>	<u>OSE</u>	<u>4/14/06</u>	<u>1050</u>	
Relinquished by:					
Received by:					

DISTRIBUTION: WHITE - Return to HWA; YELLOW - Retain by Lab; PINK - Retain by Sampler